

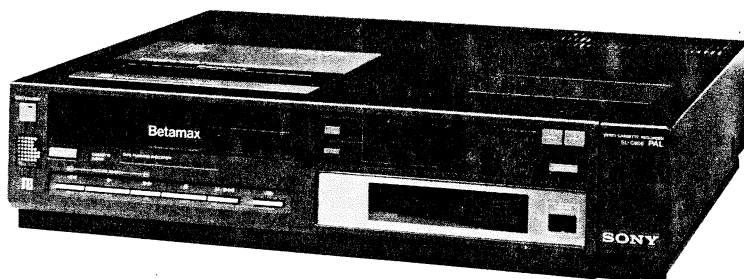


V13288

SL-C80E

RMT-220/216

SERVICE MANUAL



AEP Model
REMOTE COMMANDER
RMT-220

E Model
REMOTE COMMANDER
RMT-216

December, 1983

711B CHASSIS

SPECIFICATIONS

This manual contains the adjustment manual.

System

Video recording system

Rotary two-head helical scanning
CCIR standards, PAL colour
Video signal
Aerial input 75-ohm, asymmetrical aerial socket
Channel coverage VHF: Western European channels E2-12
UHF: Western European channels E21-68
(Up to 12 programmes can be preset.)
RF output signal UHF channels E30 to E39 (variable)
75 ohms, unbalanced

Video

Input VIDEO IN: BNC connector
1.0 V $\pm 10\%$ V (p-p)
75 ohms, unbalanced,
sync negative

Output VIDEO OUT: BNC connector
1.0 V (p-p) ± 0.1 V (p-p)
75 ohms, unbalanced,
sync negative

Horizontal resolution 260 lines

Signal-to-noise ratio Colour: Better than 40 dB
B/W: Better than 43 dB

Audio

Input AUDIO IN: phono jack
47 kilohms, -10 dBs (0 dBs = 0.775 V
rms)

Output AUDIO OUT: phono jack
Load impedance less than 10 kilohms
-10 dBs with 47 kilohms load, unbalanced

Frequency response 50 Hz to 10 kHz

Signal-to-noise ratio 41 dB

Audio distortion Less than 3% at 400 Hz

Tape transport

Tape speed 18.73 mm/sec.

Maximum recording time

2 hours 10 min. (with Sony L-500 cassette)
3 hours 15 min. (with L-750)

Fast forward/rewind time

Within 5 min. (with L-500)

Timer

Clock Crystal lock
Time indication 24-hour cycle
Timer setting Only for recording
4 events within 14 days, adjustable for any
day or for everyday
Power back-up Back-up duration of 3 minutes minimum at
one time

General

Power requirements 220 V ac $\pm 10\%$, 50 Hz ... AEP Model
110, 127, 220 or 240 V ac $\pm 10\%$ Adjustable,
50/60 Hz ... E Model

Power consumption 46 W

Storage temperature -20°C to $+65^{\circ}\text{C}$ (-4°F to $+149^{\circ}\text{F}$)

Operating temperature

 5°C to 40°C (41°F to 104°F)

Dimensions Approx. 430 $\times$ 105 $\times$ 365 mm (w/h/d)
(17 $\times$ 4 $\frac{1}{4}$ $\times$ 14 $\frac{3}{8}$ inches)

incl. projecting parts and controls
Weight Approx. 10.7 kg (23 lb 9 oz) net

Accessories supplied

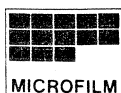
75-ohm coaxial cable for recorder to TV connection 1
Remote Commander RMT-220 with three
IEC designation R6 batteries (AEP Model) 1
Remote Commander RMT-216 with two
IEC designation R6 batteries (E Model) 1
Screwdriver for RF channel adjustment 1

Beta



VIDEO CASSETTE RECORDER

SONY®



SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK  ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

SAFETY CHECK-OUT

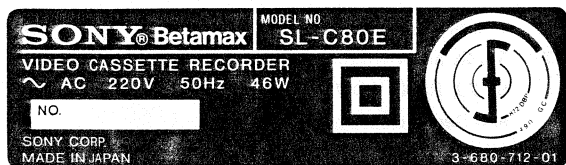
After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

MODEL IDENTIFICATION

— Specification Label —

SL-C80E AEP MODEL



SL-C80E E MODEL

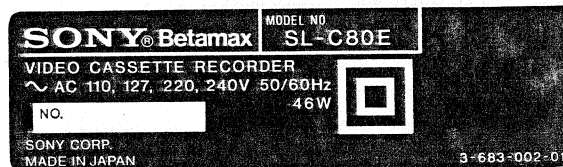


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SECTION 1 GENERAL

1-1. PRECAUTIONS

On safety

- Operates on 220 V ac, 50 Hz . . . AEP Model
- Operates on 110, 127, 220 or 240 V ac, 50/60 Hz . . . E Model
- Should any solid object or liquid fall into the cabinet, turn off the unit and have it checked by qualified personnel before operating it any further.
- ➔ To disconnect the mains lead (ac power cord), pull it out by the plug. Never pull the lead itself.

On installation

- Allow adequate air circulation to prevent internal heat build-up. Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation grille.
- Do not install the unit near heat sources such as radiators or air ducts or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- The unit is designed for operation in a horizontal position. Do not install it in an inclined position.
- Keep the unit and cassette tapes away from equipment with strong magnets, such as a microwave oven, large loudspeakers, etc.

On operation

- When the unit is not to be used for a long period, turn the power off to conserve energy and to extend the useful life of your unit.
- Remove and store video cassettes after recording or playback.

On cleaning

Clean the cabinet, panel and controls with a dry soft cloth. Do not use a moistened cloth or any type of solvent, such as alcohol or benzene, which might damage the finish.

On repacking

Do not throw away the carton and packing materials. They make an ideal container in which to transport the unit. When shipping the unit to another location, repack it as it was.

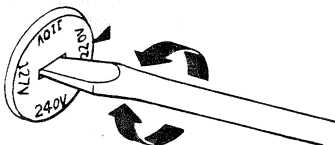
On colour broadcasting systems

This machine is designed to record and playback using the PAL colour standard. Recording and playback of video sources based on other colour systems cannot be guaranteed.

If you have any questions about this unit, contact your Sony dealer.

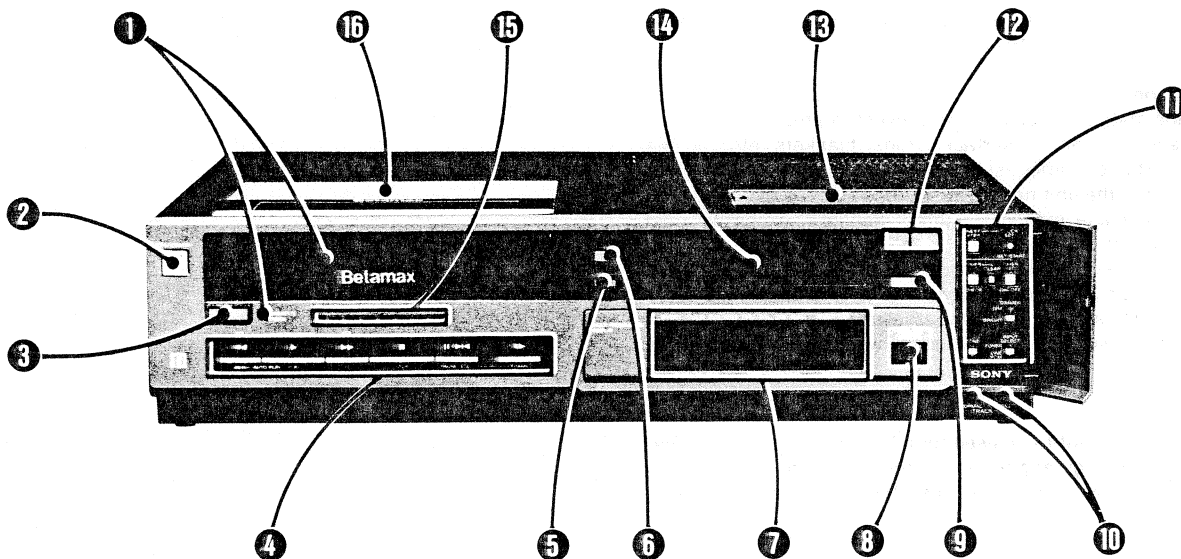
OPERATING VOLTAGE . . . E Model

Before connecting the set to a power source, check that the voltage selector located at the rear is set to your local mains power voltage. The operating voltage can be set to 110 V, 127 V, 220 V or 240 V ac. If the selector must be reset, disconnect the mains lead and turn the selector with a screwdriver or similar object so that the triangle points to the appropriate voltage.



1-2. LOCATION AND FUNCTION OF CONTROLS

Front panel



1 Cassette compartment and CASSETTE INSIDE lamp

Insert a cassette after turning on the recorder. The lamp lights up when a cassette is inside.

2 ON/STANDBY button and lamp

Press to turn on the recorder. The lamp will light up. Press again to turn it off.

The timer section will continue to operate and the time will be displayed even if the ON/STANDBY button is off so long as the ac mains lead is connected to the wall outlet.

3 EJECT button

Press to remove the cassette. This button does not function when the recorder is turned off.

4 Function buttons

► **PLAY button**: Press to play the tape back. The lamp lights up.
◄◄ **REW button**: Press to rewind the tape. Also used for the reverse picture search and skip scan operation.

►► **FF button**: Press to advance the tape rapidly. Also used for the forward picture search and skip scan operation.

■ **STOP button**: Press to stop the tape.

⏏ **PAUSE/STILL button**: Press to stop the tape for a moment during recording or playback. The lamp lights up. A still picture will be seen during playback. Press again to release the pause mode.

⏏ **FRAME button**: For frame-by-frame forward playback, press ⏏ **PAUSE/STILL** and then ⏏ **FRAME**.

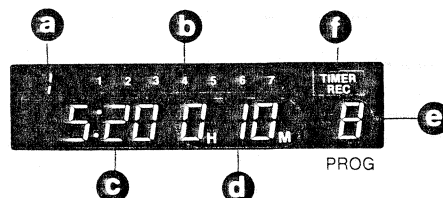
5 RESET button

Press to set the tape counter reading to "0:0000".

6 TIMER/COUNTER button

Press to set the upper display to the tape counter. To reset to clock, press it again.

7 Indication window (below)



a Event number

b **Day of the week indication**: Shows the day of the week on which the timer-activated recording will take place. The boxed numbers indicate the day of recording during the second week.

c **Turn-on time setting indication**: Shows the time at which the timer-activated recording will start.

d **Recording duration indication**: Shows the timer-activated recording duration.

e **Programme number**: Shows the programme number to be recorded.

f **TIMER REC indication**: Lights up when the **TIMER REC** button (or Commander's **SLEEP** and **RECORD**) is pressed to activate the timer recording.

Ⓐ REMOTE SENSOR

Detects the remote control signal transmitted from the Remote Commander.

Ⓓ RECORD button

Press to start recording.

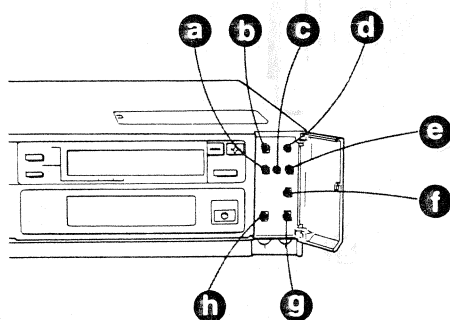
Ⓗ TRACKING controls

If streaks or snow appears during the playback of a tape recorded on another recorder, turn this knob to obtain the best possible picture.

NORMAL : when viewing normal playback

STILL : when viewing still and frame-by-frame pictures

Ⓙ Controls behind the front panel



a TIMER SET/CHECK button : Press to set the timer.

b NEXT STEP button : Used for memorizing the clock time, the day of the week and timer programmes and for advancing to the next item to be set.

c CLEAR button : Press to clear the timer programme from the memory.

d CLOCK SET button : Press to set the clock.

e TIMER REC ON/OFF button : Press to set the timer recording standby mode. The TIMER REC indication will light up. To deactivate the timer recording (OFF), press again.

f DIMMER switch : Normally set to BRIGHT. If the indication windows are too bright, set to DIM.

g INPUT SELECT switch : Select the programme to be recorded.
TUNER : for recording TV programmes

LINE/PCM : for recording signals connected to the VIDEO IN and AUDIO IN jacks

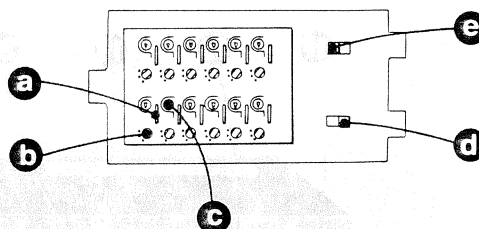
h TONE select switch

Normally set to the H position. Set to L if the sound seems to exaggerate high frequencies during the playback of a tape recorded on another recorder.

⓫ +/– buttons

Press + to advance forward or – to move backward the programme numbers, day of the week, hours, minutes and events.

⓬ Tuning compartment



a Tuning control : Turn until the desired stations are properly tuned in.

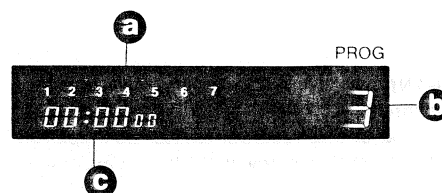
b Band-select switch : According to the stations chosen, select VL (channels E2 through E4), VH (channels E5 through E12), or U (channels E21 through E68).

c Tuning indicator : Provides a visual indication of the approximate location to be tuned in within the selected band.

d AFT switch : When the AFT switch is set to ON, the automatic fine tuning circuit locks in the signal and maintains a sharp picture. To tune the recorder to TV stations, set the switch to OFF to deactivate the AFT.

e TEST SIGNAL switch : Set to ON to obtain a test pattern.

⓭ Indication window (upper)



a Day of the week indication : Shows the current day of the week.

b Programme number : Shows the programme number that has been selected. When the INPUT SELECT switch is set to LINE/PCM to record signals from the VIDEO IN and AUDIO IN jacks, the programme number indication will disappear.

c Clock and time counter display : Usually shows the current time. When the TIMER/COUNTER button is pressed, the display functions as a time counter. Press again to reset to clock.

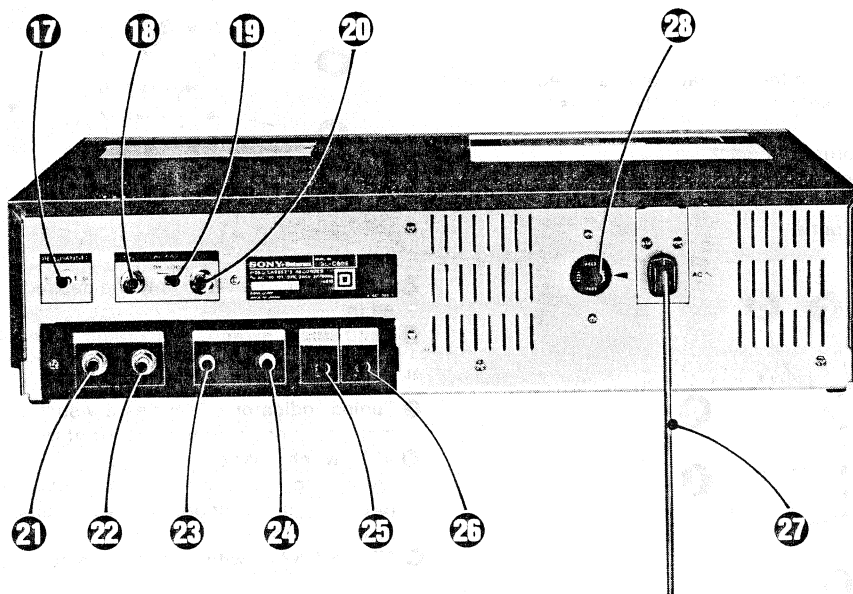
⓮ Tape running indicator

A sequence of green blinking lights will show the speed and direction in which the tape is running. Red blinking lights indicate recording is in process.

⓯ Cassette window

Allows you to check the amount of tape remaining.

Rear panel



17 RF CHANNEL screw

If there is interference on the factory preset channel for RF output and the signal of this recorder cannot be displayed clearly on the TV screen, adjust this screw with the supplied screwdriver.

18 AERIAL OUT socket

Connect the aerial input of the TV receiver using the supplied cable.

19 DX/LOCAL switch

Normally set this switch to DX. If the TV signal is very strong, set the switch to LOCAL.

20 AERIAL IN socket

Connect the aerial cable.

21 VIDEO OUT jack (BNC type)

Connect to the video input of another video cassette recorder or a video monitor.

22 VIDEO IN jack (BNC type)

Connect to the video output of a camera, another video cassette recorder, etc.

23 AUDIO OUT jack (phono type)

Connect to the audio input of a video monitor or a video cassette recorder.

24 AUDIO IN jack (phono type)

Connect to the audio output of a camera or another video cassette recorder.

25 CAMERA REMOTE jack (special mini jack)

For camera recording, connect an ac adaptor to this jack.

26 TV VERT LOCK (TV vertical lock) control

If a jitter appears in the still or frame-by-frame picture, first obtain a still picture and turn this control until the picture is stable.

27 AC mains lead

28 Voltage selector . . . E Model

This selector is adjustable to either 110, 127, 220 or 240 V ac.

1.3. PREPARATION

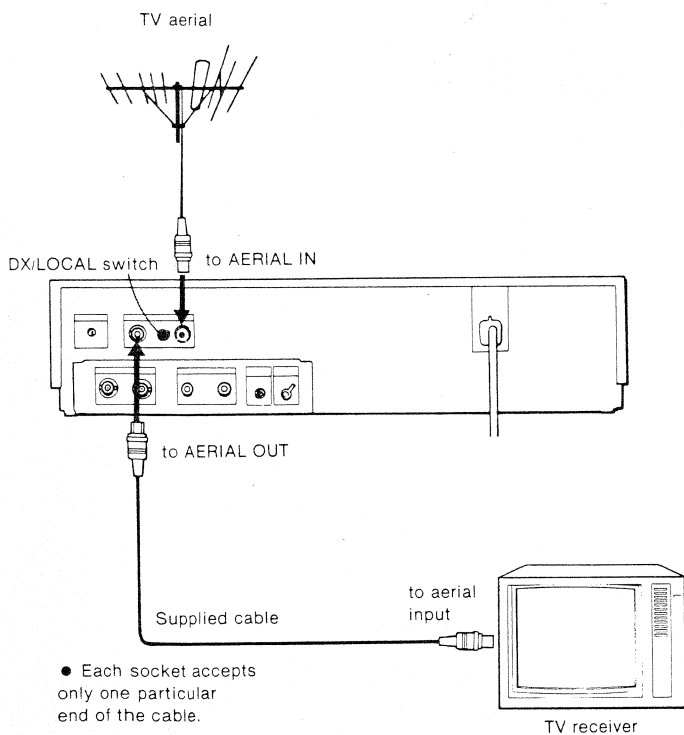
CONNECTIONS

Notes

- Unplug each unit from the mains outlet before making the following connections.
- Make sure the connections are secure. A loose connection may cause a noisy picture.

CONNECTING A TV

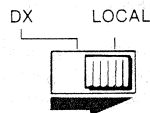
- 1 Remove the aerial cable from its socket in the back of the TV. Then connect the aerial cable to the AERIAL IN socket at the rear of the recorder.
- 2 Connect the aerial input of the TV to the AERIAL OUT socket of the recorder, using the supplied cable.
- 3 Connect the recorder and the TV to the mains supply with their own mains leads.
- 4 Turn on the power of each unit.



Now the recorder is set up to intercept all signals from the aerial on their way to the TV. The recorder then passes on the signals to the TV. This is why you can record a programme while it is being shown on the TV, or while the TV is showing another programme, or even when the TV is turned off.

Notice for customers in a strong signal area

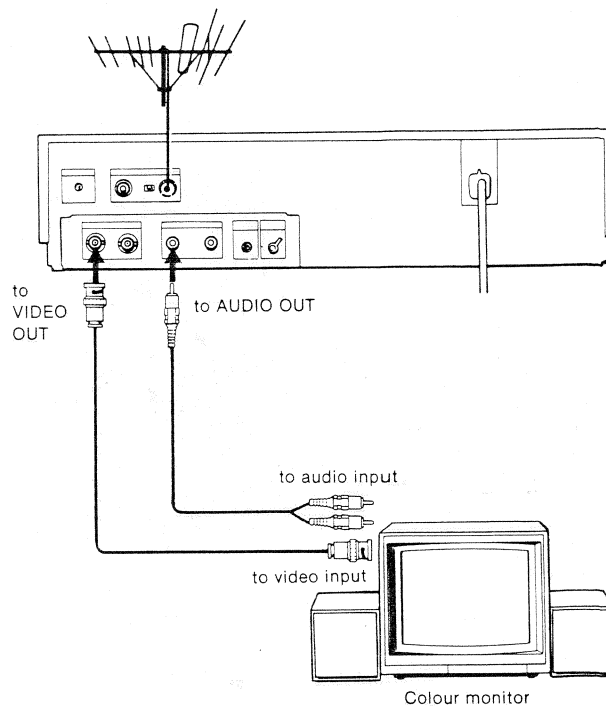
The recorder has a booster to assure stable TV reception. However, in areas near TV stations, where the TV signal is very strong, the picture may be affected by the booster. If this happens, set the DX/LOCAL switch on the rear panel to LOCAL.



CONNECTING A COLOUR MONITOR

To obtain a higher-quality picture, connect the unit to a colour monitor, such as the Sony Profeel colour monitor, instead of a conventional TV. The aerial should be connected to the recorder in the same way as a conventional TV.

When using a colour monitor, the following "Adjusting the TV" is not necessary.



1-4. ADJUSTING THE TV

One of the television channels must be adjusted to receive the signal from the recorder.

- 1 After making the connections, press the ON/STANDBY button.
- 2 Make sure that the recorder is in the stop mode.
- 3 Set the TEST SIGNAL switch in the tuning compartment of the recorder to ON.
- 4 Turn on the TV and select a channel which is not being used to receive a TV station. Tune the channel until you see a clear black and white pattern on the TV screen and you hear a continuous tone. This is the recorder's test signal.
- Note that the test signal is transmitted on a channel between UHF channels 30 and 39.

If the test picture is free of disturbance, the TV adjustment is complete. Set the TEST SIGNAL switch to OFF.

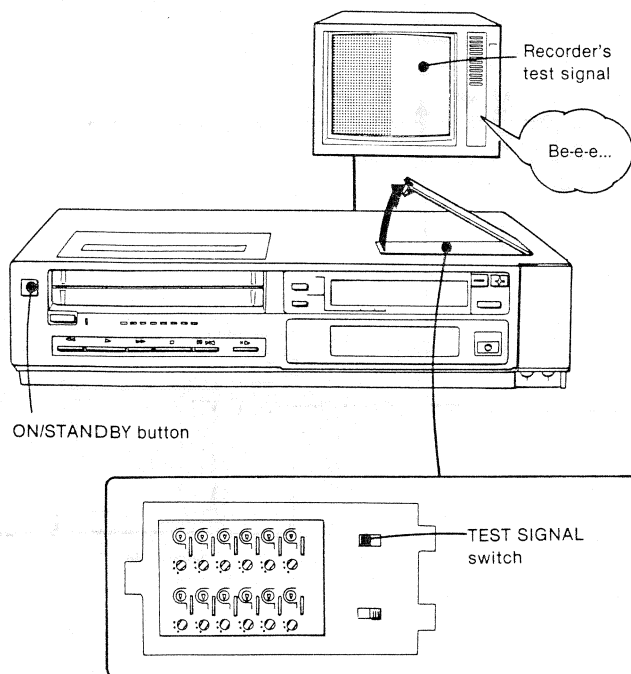
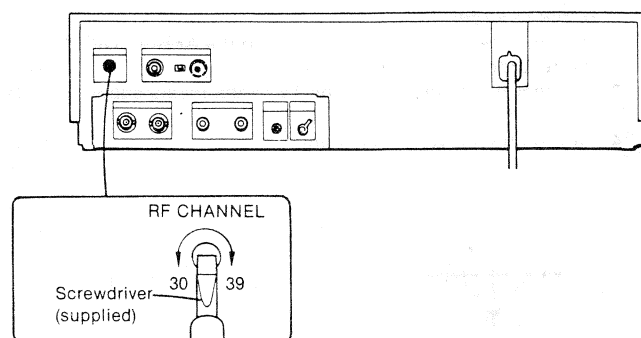
If the test picture is not free of disturbance, proceed with the next adjustment.

Whenever you use the video recorder, you should set the TV to the channel selected in this adjustment.

—If you are not sure how to adjust your TV, please refer to the TV's instruction manual or consult your dealer.

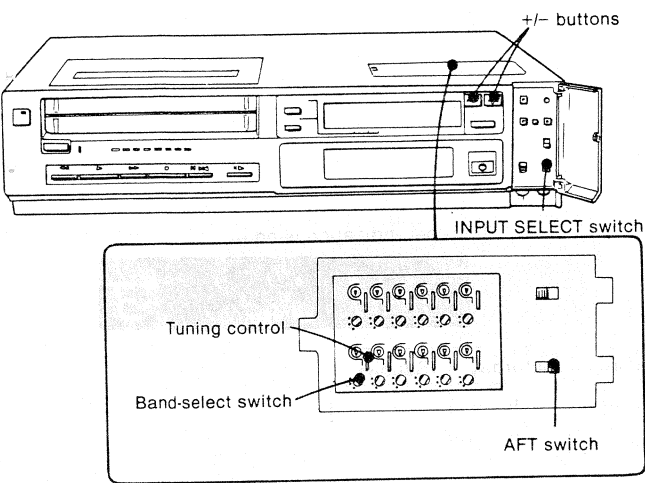
If the test picture is not free of disturbance

- 1 Reset the TEST SIGNAL switch to OFF.
- 2 Adjust the channel of the TV to a channel between UHF channels 30 and 39 with the tuning control or the fine tuning control on the TV, so that the TV screen shows no picture and so that a steady rustling sound or no sound is heard.
- 3 Set the TEST SIGNAL switch to ON again.
- 4 Slowly turn the RF CHANNEL screw on the back of the recorder with the supplied screwdriver, until you see an undistorted test picture on the TV screen.
- 5 Now the TV adjustment is complete. Reset the TEST SIGNAL switch to OFF.



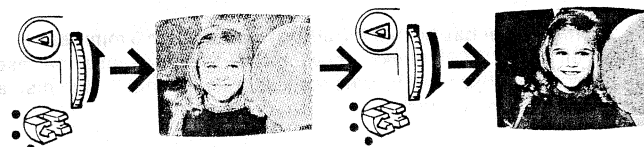
1-5. TV STATION PRESETTING

Once you have tuned your TV to the recorder, the next step is to tune the recorder to all the TV stations that you can receive in your area. Up to 12 TV stations can be preset in any order.



When the picture appears, slowly turn the tuning control upward until a herringbone pattern appears in the coloured part of the picture, then turn the control back until the picture is perfectly clear.

To identify the stations, consult a newspaper or TV programme guide.

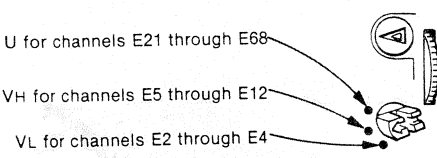


- 6 Repeat the same operation for all the other stations.
- 7 Set the AFT switch to ON.
AFT (automatic fine tuning) circuit then locks in the signal and maintains a sharp picture.
- 8 Close the tuning compartment.

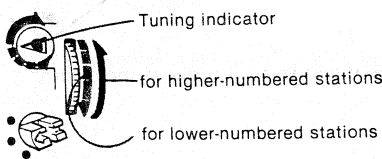
After presetting the TV stations, you can use the programme select buttons of the recorder to tune in a station for viewing as well as recording.

PRESETTING PROCEDURE

- 1 Set the INPUT SELECT switch to TUNER.
- 2 Using the +/- buttons, choose a programme number (from 1-12) to be preset.
- 3 Open the tuning compartment and set the AFT switch to OFF.
- 4 Set the band-select switch corresponding to the selected programme number to one of the three positions:



- 5 Turn the tuning control until the desired station is properly tuned in.
The indicator shows the approximate position in the selected band.



If you keep turning the tuning control downward, you will reach the lowest-numbered station within that band.

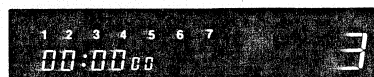
1-6. CLOCK SETTING

Connect the mains lead to a wall outlet. Two blinking dots indicate that the clock is ready to be set.

Please note that the clock setting on the recorder provides one-minute segment while the Commander only allows settings at five-minute intervals. For the clock setting on the recorder, refer to the next page. AEP Model

When power has been interrupted for more than 3 minutes, the time indication "0:00" blinks, showing that the clock must be reset. If power has been interrupted for less than 3 minutes, the displayed time remains correct.

Upper indication window



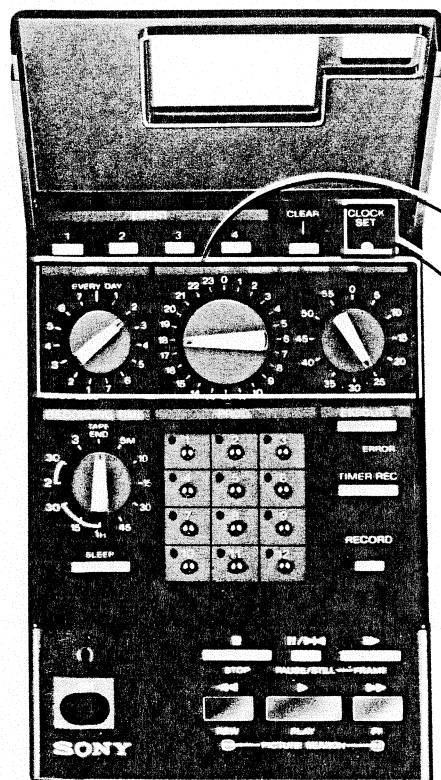
indication in the upper window on the recorder

For	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Set to	1	2	3	4	5	6	7
in window	1	2	3	4	5	6	7

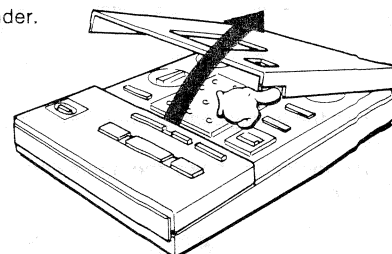
For	AM		PM		
	12:00 midnight	1:00	12:00 noon	1:00	11:00
Set to	0	1	12	13	23
in window	0:00	1:00	12:00	13:00	23:00

CLOCK SETTING ON THE COMMANDER . . . AEP Model

Example: set for Tuesday evening at 6:25 (hypothetically current time)



- 1 Open the panel lid of the Commander.



- 2 Dial DAY to 2, H to 18 and M to 25. Make sure that each dial setting clicks at the desired position.

- 3 Pointing the Commander toward REMOTE SENSOR on the recorder, press CLOCK SET by using a pencil or similar object with broadcast time signal.

The time will be displayed in the upper indication window with a "beep" and now the clock activates.



The upper dot blinks for the first half of each minute, and the lower dot for the second half.

1-7. CLOCK SETTING ON THE RECORDER . . . AEP Model, E Model

Example: to set for Wednesday afternoon at 3:56 (hypothetically current time)

Upper indication window

1

1 Press CLOCK SET.
Flashing "1" appears.

3

2 Set the day of the week with the +/- buttons.

3

3 Press NEXT STEP.

3

4 Set the hours with the +/- buttons.

3

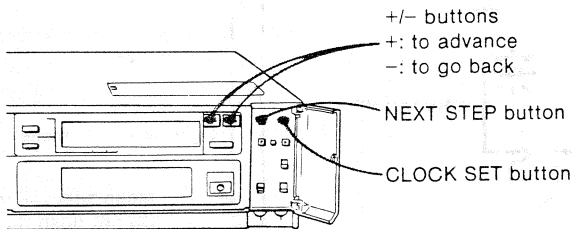
5 Press NEXT STEP.

3

6 Set the minutes with the +/- buttons. (Use broadcast time signal for accurate setting.)

3

7 Press NEXT STEP.
The clock will now show the current time.



+/- buttons

The + and - buttons can be used in two ways:

When pressed, the digits will advance continuously until the button is released.



When you press and immediately release, the digits will advance by one.



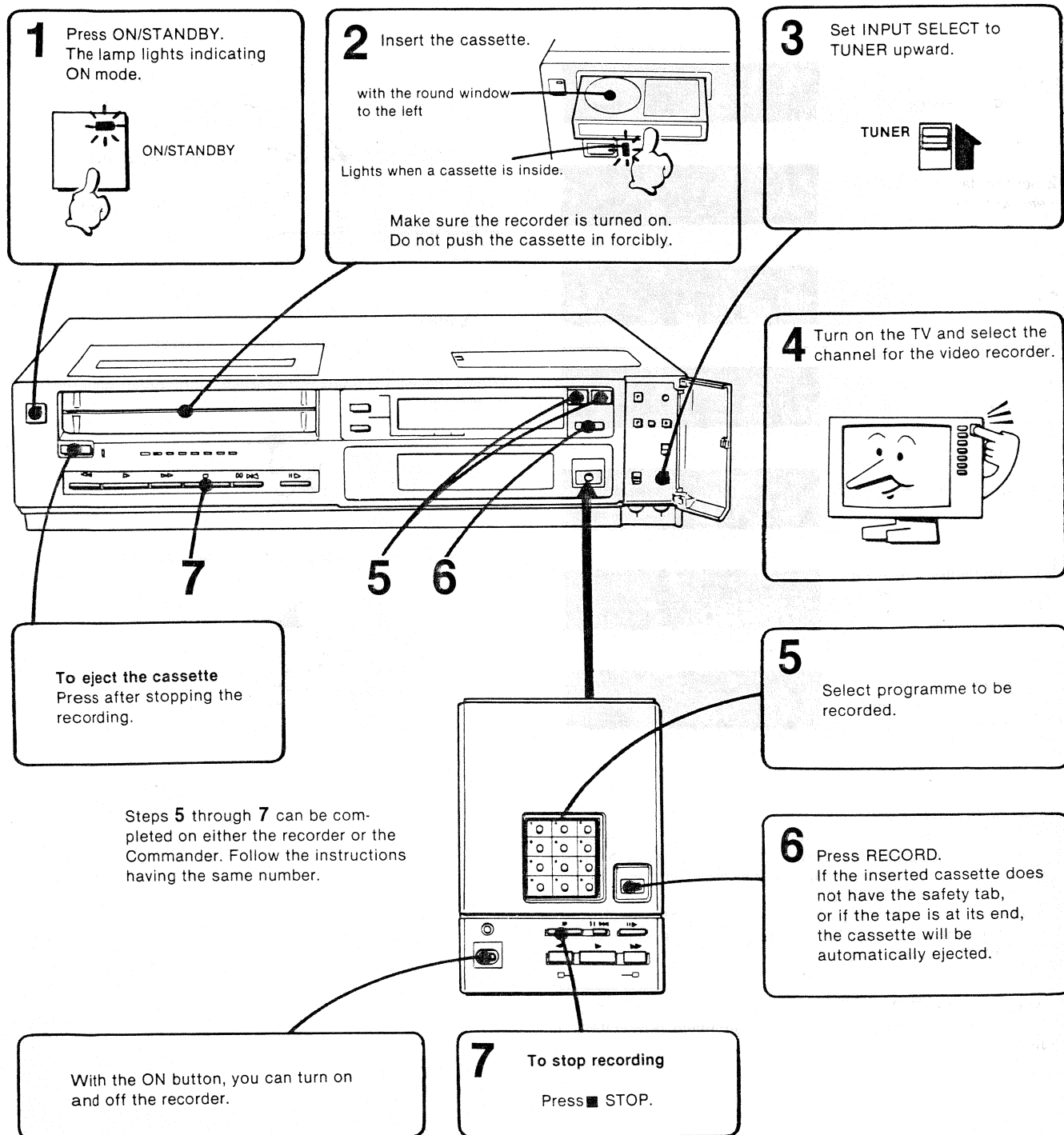
Zero second adjustment

Press the CLOCK SET button on the recorder quickly (less than a second). While the upper dot is blinking, the clock is set to the time displayed 00 second. For example, if the clock time is 7:30, 20 seconds, it is set to 7:30, 00 second.

While the lower dot is blinking, the clock advances one minute and is set to the time displayed 00 second. For example, if the clock time is 7:30, 40 seconds, it is set to 7:31, 00 second.

If you press the CLOCK SET button for more than a second, "0:00" blinks to show that the clock adjustment is required again.

TV PROGRAMME RECORDING



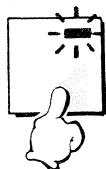
When the tape reaches the end during recording, it will be automatically rewound to the beginning.

CAUTION

Television programmes, films, video tapes and other materials may be copyrighted. Unauthorized recording of such material may be contrary to the provision of the copyright laws.

PLAYBACK

- 1** Press ON/STANDBY.
The lamp lights indicating ON mode.

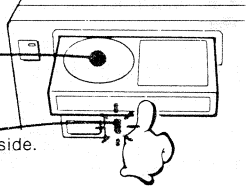


ON/STANDBY

- 2** Insert the cassette.

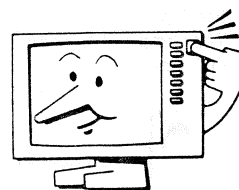
with the round window
to the left

Lights when a cassette is inside.

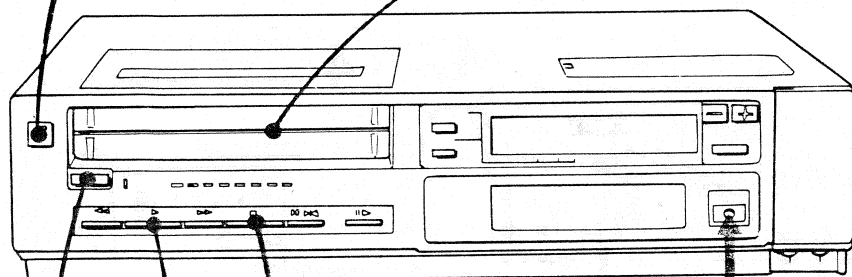


Make sure the recorder is turned on.
Do not push the cassette in forcibly.

- 3**



Turn on the TV and select the
channel for the video recorder.



4

5

Steps **4** and **5** can be completed on
either the recorder or the Com-
mander. Follow the instructions hav-
ing the same number.

To eject the cassette

With the ON button, you can turn
on and off the recorder.

To stop the playback momentarily

Press **II/PAUSE/STILL**.

A still picture will be seen on the
TV screen.

To view a frame picture
Press **III/FRAME** during pausing.

To rewind the tape

Press **◀◀ REW.**

To advance th tape rapidly

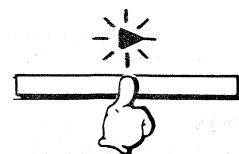
Press **▶▶ FF.**

When the tape reaches the end, it will
be automatically rewind to the
beginning.

- 5** To stop playback

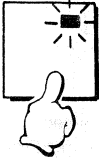
Press **■ STOP.**

- 4** Press **▶ PLAY** so that the
lamp on the recorder lights.



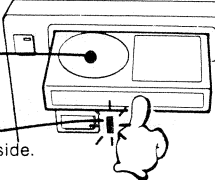
TV PROGRAMME RECORDING

1 Press ON/STANDBY.
The lamp lights indicating ON mode.



ON/STANDBY

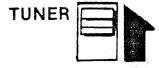
2 Insert the cassette.
with the round window to the left



Lights when a cassette is inside.

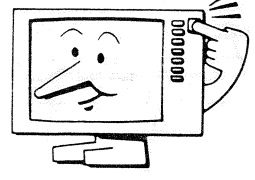
Make sure the recorder is turned on.
Do not push the cassette in forcibly.

3 Set INPUT SELECT to TUNER upward.



TUNER

4 Turn on the TV and select the channel for the video recorder.



5 Select programme to be recorded.

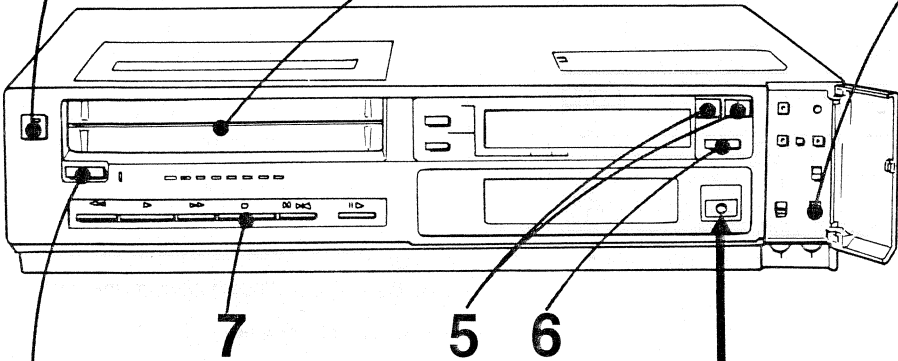
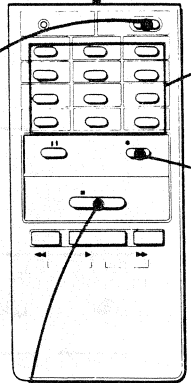
6 Press ● REC.
If the inserted cassette does not have the safety tab, or if the tape is at its end, the cassette will be automatically ejected.

7 To stop recording
Press ■ STOP.

To eject the cassette
Press after stopping the recording.

Steps 5 through 7 can be completed on either the recorder or the Commander. Follow the instructions having the same number.

With the ON button, you can turn on and off the recorder.

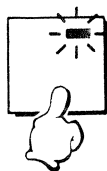
When the tape reaches the end during recording, it will be automatically rewound to the beginning.

CAUTION

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PLAYBACK

- 1** Press ON/STANDBY.
The lamp lights indicating
ON mode.

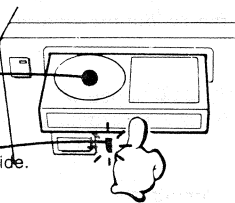


ON/STANDBY

- 2** Insert the cassette.

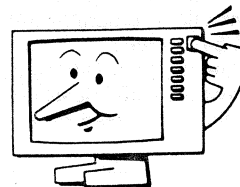
with the round window
to the left

Lights when a cassette is inside.



Make sure the recorder is turned on.
Do not push the cassette in forcibly.

- 3**



Turn on the TV and select the
channel for the video recorder.

4

5

Steps **4** and **5** can be completed on
either the recorder or the Com-
mander. Follow the instructions hav-
ing the same number.

To stop the playback momentarily

Press **II** PAUSE.

A still picture will be seen on the
TV screen.

To view a frame picture

Press **III** FRAME on the recorder
during pausing.

To rewind the tape

Press **◀◀** REW.

To advance th tape rapidly

Press **▶▶** FF.

When the tape reaches the end, it will
be automatically rewound to the
beginning.

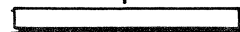
To eject the cassette

With the ON button, you can turn
on and off the recorder.

- 5** **To stop playback**

Press **■** STOP.

- 4** Press **▶** PLAY so that the
lamp on the recorder lights.



TV PROGRAMME RECORDING

OPERATION

To stop recording momentarily

Press the **II/PAUSE/STILL** button. The lamp above the button will light. The TV programme can be seen on the TV, but the picture will not be recorded.

To resume recording, press the button again.

To protect the video heads and the tape, the pause mode will be automatically released after about 8 minutes and recording will stop.

When a power interruption occurs during recording, the tape will shut off and the recorder will stop.

RECORDING ONE TV PROGRAMME WHILE VIEWING ANOTHER

You can enjoy one TV programme while recording another TV programme as follows :

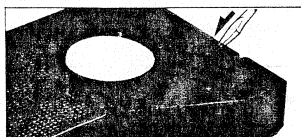
1. Start recording the desired TV programme in the usual way.
2. Select the programme you want to view with the TV's programme selector.

AVOIDING ERASURE OF A RECORDED PROGRAMME

When a new recording is made on a previously recorded cassette, the previous recording will be automatically erased.

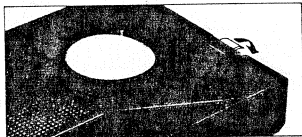
To avoid erasing a recording

Break off the safety tab using a screwdriver or similar object.



To re-record on a cassette which has had the safety tab removed

Cover the slot with a piece of plastic tape.



PLAYBACK ON THE RECORDER

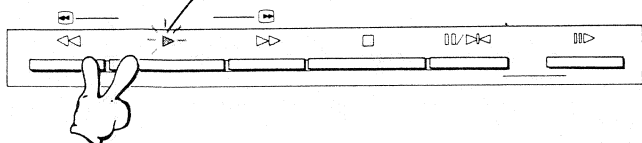
AUTO PLAYBACK

To playback from the beginning of the tape after rewinding

Press the ► PLAY button and ◀◀ REW button simultaneously in the stop mode.

After the tape is completely rewound, it will be automatically played back.

Lights when playback starts.



To gain a frame-by-frame picture

Press ■■■ PAUSE/STILL. And then press the ■■■► FRAME button during pausing.

If the tape is advanced frame-by-frame from its beginning, the tape will not rewind when the ◀◀ REW button is pressed.

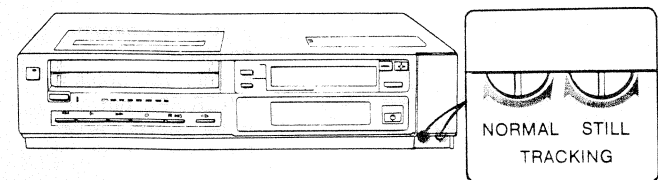
PLAYING BACK A TAPE RECORDED ON ANOTHER MACHINE

For good picture

If streaks or snow appears, adjust the NORMAL TRACKING control for the best possible picture.

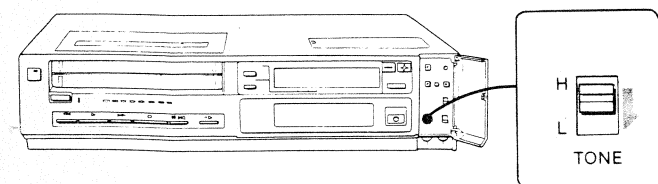
If the still and frame-by-frame pictures are noisy, adjust the STILL TRACKING control.

Return the control to the centre position after playing back the tape.



For good sound

If the sound seems to exaggerate high frequencies during the playback of a tape recorded on another recorder, set the TONE select switch to L. Under normal conditions, TONE should be in the H position.

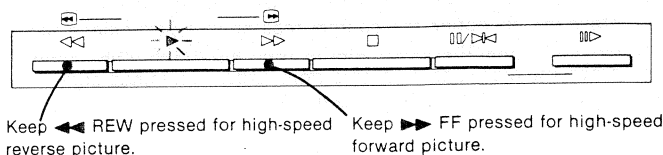


SEARCHING FOR A PARTICULAR SCENE

Picture search

Viewing the picture at a fast speed to find a particular scene.

During playback;



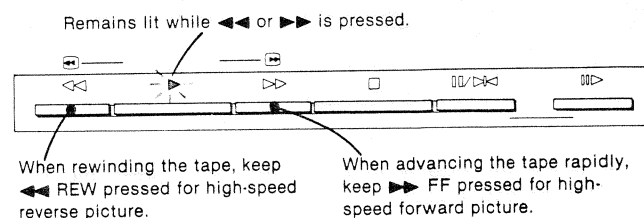
To resume normal playback, release the button at the desired point.

The picture search mode can also be started directly from the pause mode.

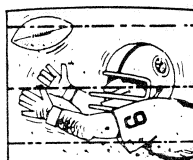
Skip Scan

Viewing the picture momentarily during fast-forward or rewind.

During the rewind or fast-forward mode;



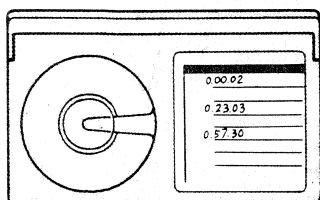
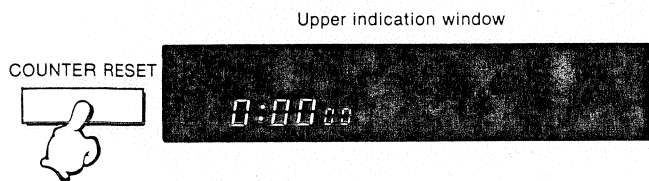
To resume normal rewind or fast forward, release the button at the desired point.



Streaks will appear during the picture search, the Skip Scan and the pause modes.

REFERENCING A RECORDED PROGRAMME NUMERICALLY

When the TIMER/COUNTER button is pressed once, the display will indicate how much the tape has advanced at recording and playback in hours, minutes and seconds. Press the COUNTER RESET button to set the counter to "0:00:00" before recording or playback. By noting the counter reading at a particular point, you can easily find that point later by referring to the time counter. When the tape runs in reverse from "0:00:00", a minus sign "-" will be displayed to the left of the figures.



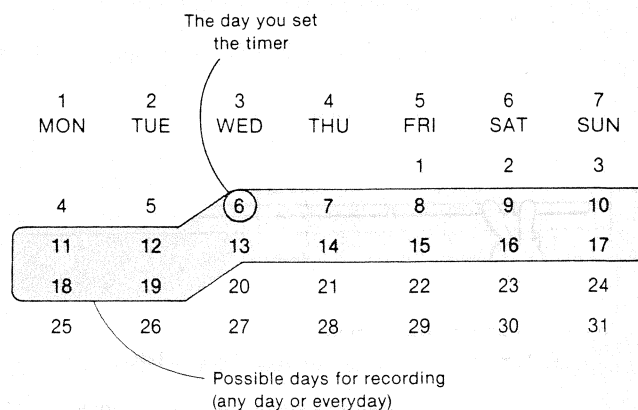
Write the counter readings you want to remember on the label of the cassette.

To return the display to the current time, press the TIMER/COUNTER button again.

- The counter reading is automatically reset to zero when a cassette is newly inserted.
- While the power is off, the display shows the current time, regardless of the TIMER/COUNTER setting.
- The counter reading will be retained in the memory even after the power is turned off, as long as the cassette is in the cassette compartment.
- The tape counter does not operate when a blank, unrecorded tape is played.

1-10. TIMER-ACTIVATED RECORDING

Four recordings can be preset for any two week period. These recordings are identified as EVENT 1, 2, 3 and 4.



CHECK BEFORE SETTING THE TIMER:

- Is the clock correctly set?
- Is the tape long enough to record the programmes?
- Is a cassette inserted in the compartment?

Make sure that the CASSETTE INSIDE lamp lights up.

- Is the INPUT SELECT switch set to TUNER?

If not, the alarm will sound when TIMER REC is pressed.

- Does the cassette have a safety tab on the bottom?

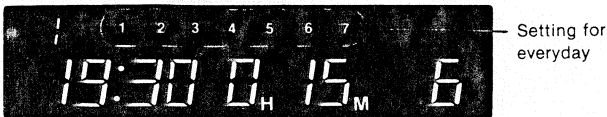
If not, the cassette will be ejected automatically when you press the TIMER REC button. If the recorder is off, the alarm will sound when you press the TIMER REC button.

In timer-activated recordings, the tape will not be rewound automatically.

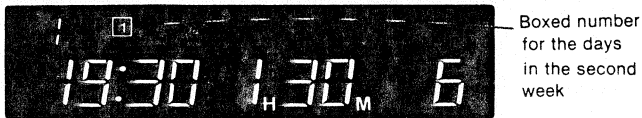
WINDOW INDICATIONS ON THE RECORDER

Everyday setting

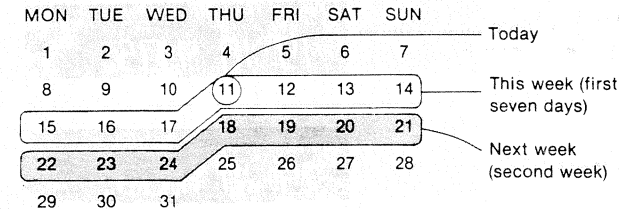
If you want to make a recording for consecutive days at the same time on the same channel for the same recording duration, set the day dial to the everyday setting.



Next week setting



If today is Thursday, and the setting of the day is 4, the recording will take place on Thursday of the following week (seven days from today).



If today is Sunday, August 14, and you want to record a programme on Thursday, August 25, the setting of the day must be to 4.

Tape end setting

To record the entire tape, set to "H --M".



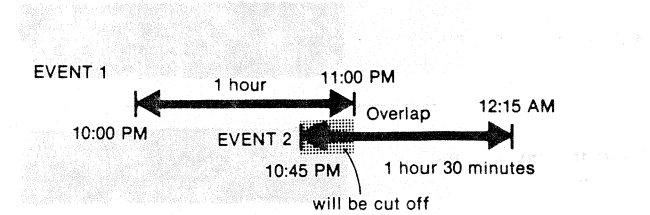
At the end of the tape the recorder will be turned off.

SPECIFIC NOTES ON TIMER-ACTIVATED RECORDING

ONCE THE TIMER REC LAMP HAS LIT UP, NO FUNCTION OF THE RECORDER CAN BE ACTIVATED, except for checking the timer setting.
To operate the recorder after setting the timer for recording, press the TIMER REC button so that the TIMER REC lamp goes off. To reactivate the timer recording standby mode, be sure to press the TIMER REC button again.

WHEN THE PRESETTINGS OF YOUR TIMER-ACTIVATED RECORDINGS OVERLAP

There will be no error indication to inform you of the overlap. Even if there is an overlap, recording will be made.



In this case, when the first recording is completely finished, the recording of the following programme will begin. Consequently, the programme preset for the later time will be cut off in the beginning of its recording.

WHEN A POWER INTERRUPTION OCCURS DURING TIMER RECORDING

If the clock shows "0:00" and blinks

All the timer settings have been erased. Reset the clock time and timer settings.

If the dots blink but the clock still shows the correct time

The power has been interrupted for less than 3 minutes. Press the ON/STANDBY button to stop the blinking. The timer set programmes have been retained in the memory and the ongoing timer recording will resume when the power is restored.

If the power interruption occurs when timer recording is finishing, the clock will not indicate any power interruption. The recorder will be turned on when the power is restored and will remain on.

WHEN THE TIMER-ACTIVATED RECORDING IS FINISHED

- 1 Press the ON/STANDBY button and rewind the tape by pressing the ◀ REW button.
- 2 Press EJECT button and take out the cassette.
The memorized turn-on time and recording duration of each programme in the timer will be erased one by one after each recording. Please note that if you have set the timer to record everyday, the memory will not be erased until the tape reaches its end.

1-11. TIMER-ACTIVATED RECORDING ON THE RECORDER

Suppose you want to first make a recording (EVENT 1) of a programme 4 from 7:10 to 11:15 on Friday evening.

1 Press TIMER SET/CHECK. Flashing "1" appears indicating Event 1.

Lower indication window



2 Set the event with the +/- buttons.



3 Press NEXT STEP.



4 Set the day with the +/- buttons.



5 Press NEXT STEP.



6 Set the hours with the +/- buttons.



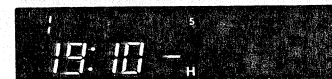
7 Press NEXT STEP.



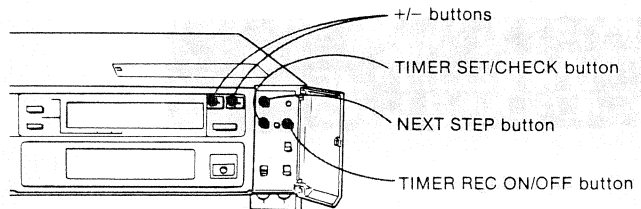
8 Set the minutes with the +/- buttons.



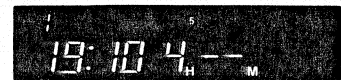
9 Press NEXT STEP.



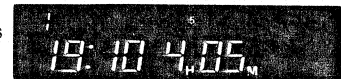
10 Set the recording hours with the +/- buttons.



11 Press NEXT STEP.



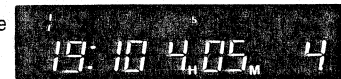
12 Set the recording minutes with the +/- buttons.



13 Press NEXT STEP.



14 Choose the number of the programme to be recorded with the +/- buttons.



To set events 2, 3 and 4, press NEXT STEP and repeat steps 3 through 14.



15 Press the TIMER REC ON/OFF button.

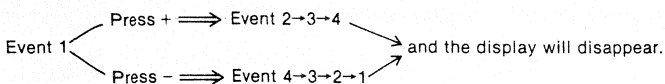
The recorder is on standby mode.



Recording will start at the preset time and will automatically stop when all the events have been completed.

To check the timer setting

- 1 Press TIME SET/CHECK. The setting for event 1 will be displayed.
- 2 With the + or - button, display the other events' settings.



If you want to reset a certain event, follow the procedure for steps 1 to 14.

- 3 Press TIMER REC ON/OFF to activate the timer recording.

If you want to erase the memory of an event immediately

- 1 Press TIMER REC ON/OFF to release the timer recording.
- 2 Press TIMER SET/CHECK.
- 3 Select the event number to be erased using + or - button.
- 4 Press CLEAR.

The timer programme for this event will be erased from the memory. Indication shows "--:-- -H--M--".

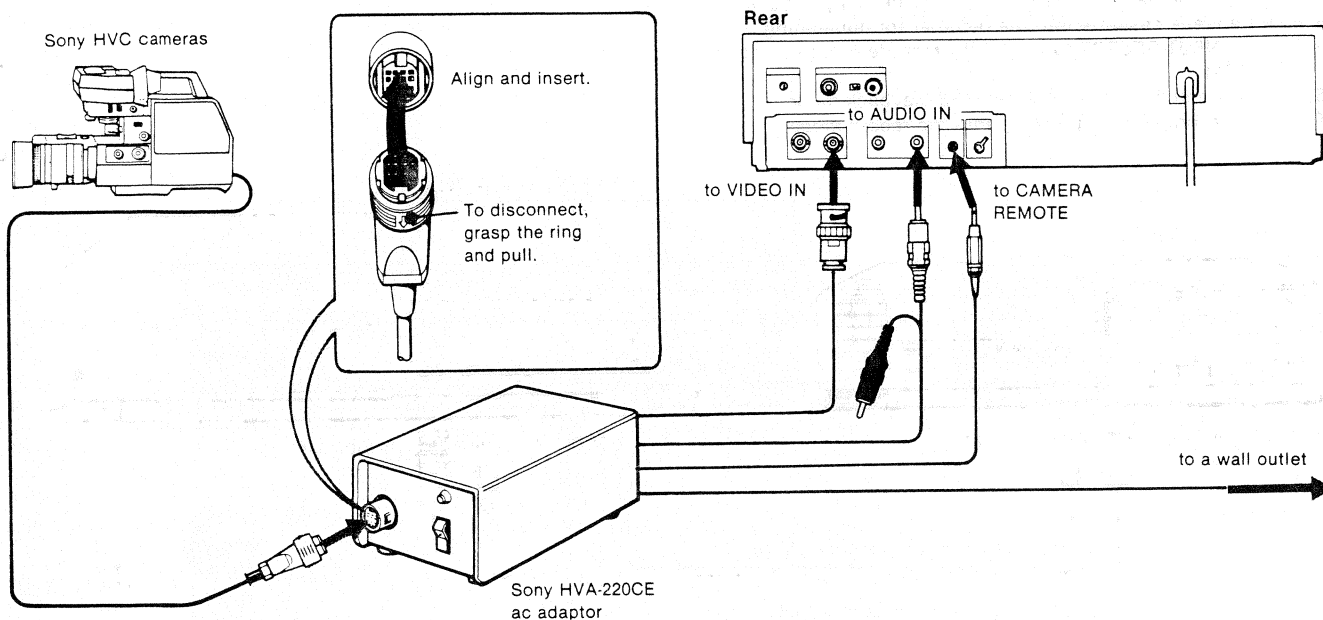
Repeat steps 3 and 4 if you desire to erase any other events.

To activate the timer recording for the remaining events, press TIMER REC ON/OFF.

1-12. CAMERA RECORDING ...To produce your own programmes

CONNECTIONS

The camera must conform to CCIR PAL TV standards.



OPERATION

1 Press the ON/STANDBY button to turn on the recorder and insert a cassette. Make sure that the INPUT SELECT switch is set to LINE/PCM.

2 Turn on the power switch on the ac adaptor.

3 Make the necessary adjustments on the camera. See the instruction manual furnished with the camera.

4 Press the RECORD button. Recording will begin.

- If a camera with a tape start/stop button is used, you can momentarily stop recording and restart it using that button.

- If any other camera is used, use the **II/PAUSE/STILL** button on the recorder or on the Commander to stop the recording momentarily and restart it.

5 When the recording is finished, press the **■ STOP** button.

To view the picture being recorded on the TV screen

1 Turn the connected TV on.

2 Select the channel for the video recorder on the TV.

The picture being recorded will appear on the TV screen.

- If acoustic feedback (a whistle-like sound) is heard when the microphone sound is recorded, turn the microphone (or the camera, if the microphone is built into the camera) away from the TV or turn down the TV volume.

Note

If the input signal level from the VIDEO IN connector is more or less than the required level, you may see a distorted picture or hear a buzzing sound when you monitor the picture on a television or on a monitor screen during camera recording. In this case the picture will still be properly recorded and can be played back without distortion.

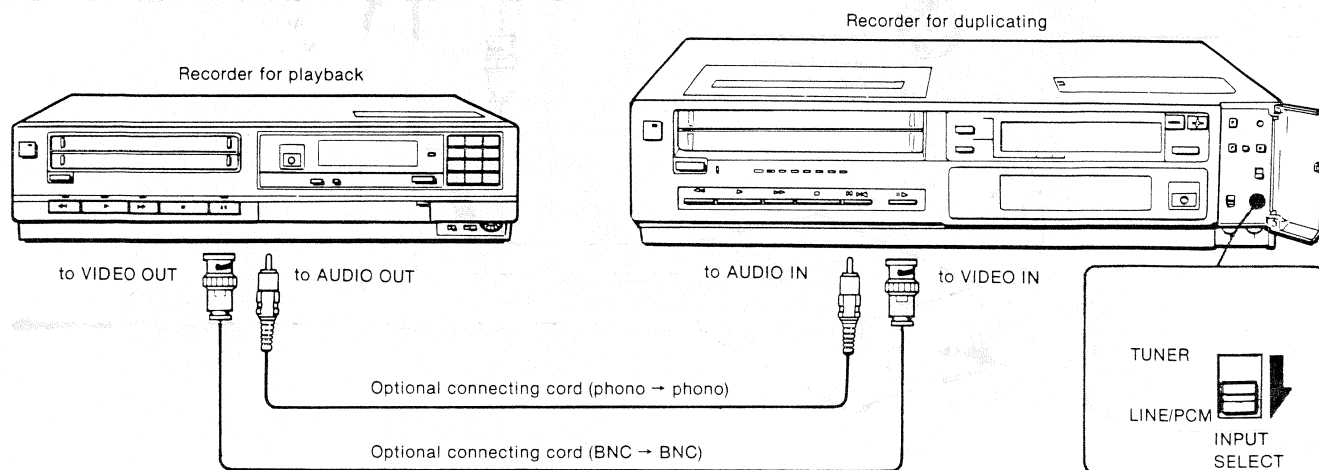
To record the sound from other audio sources

Connect an audio source, such as a tape recorder, into the AUDIO IN jack.

1-14. TAPE COPY

To duplicate a tape, you will need two video recorders ; one is to play back the original tape and the other is to record.

- 1 Connect the recorders as illustrated.
- 2 Turn on both recorders.
- 3 Insert the original cassette into the recorder for playback.
- 4 Insert a blank cassette into the recorder for duplicating.
- 5 Set the INPUT SELECT switch of the recorder for duplicating to LINE/PCM.
- 6 Set the recorder for playback into the playback mode.
- 7 Set the recorder for duplicating into the record mode.



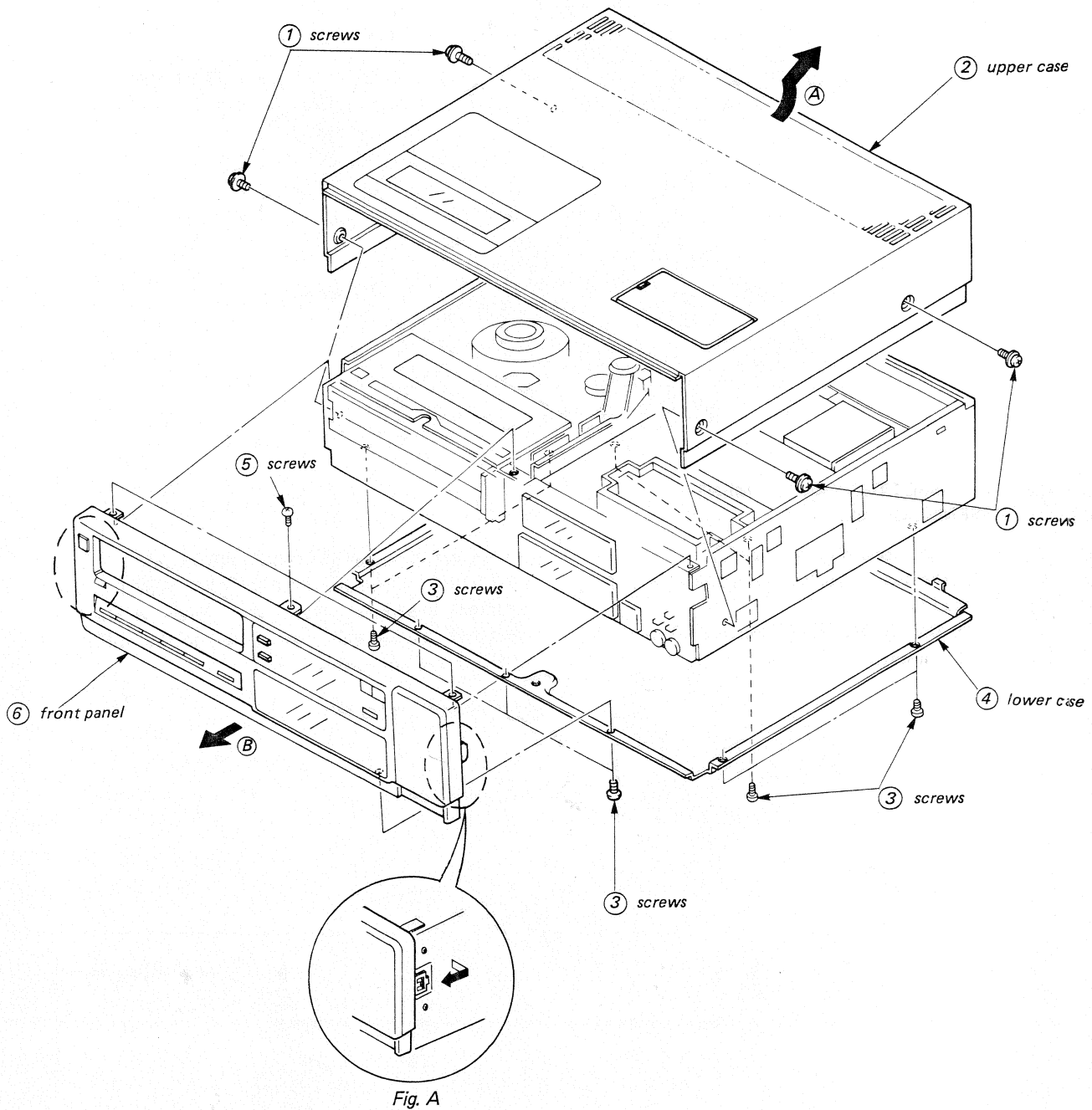
CAUTION

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SECTION 2 DISASSEMBLY

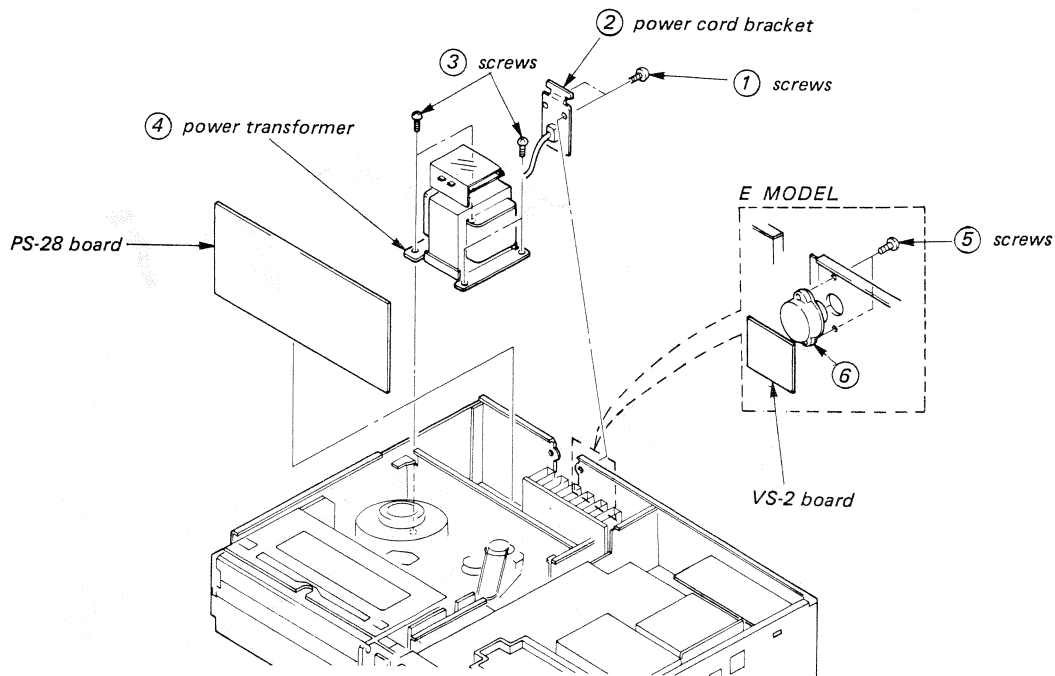
2-1. CASE AND FRONT PANEL REMOVAL

- 1) Remove the four screws ①.
 - 2) Remove the upper case ② in the direction shown by the arrow ④.
 - 3) Remove the nine screws ③.
 - 4) Remove the lower case ④.
 - 5) Remove the three screws ⑤.
 - 6) Remove the front panel ⑥ in the direction of the arrow ⑤.
- (Refer to the Fig. A)



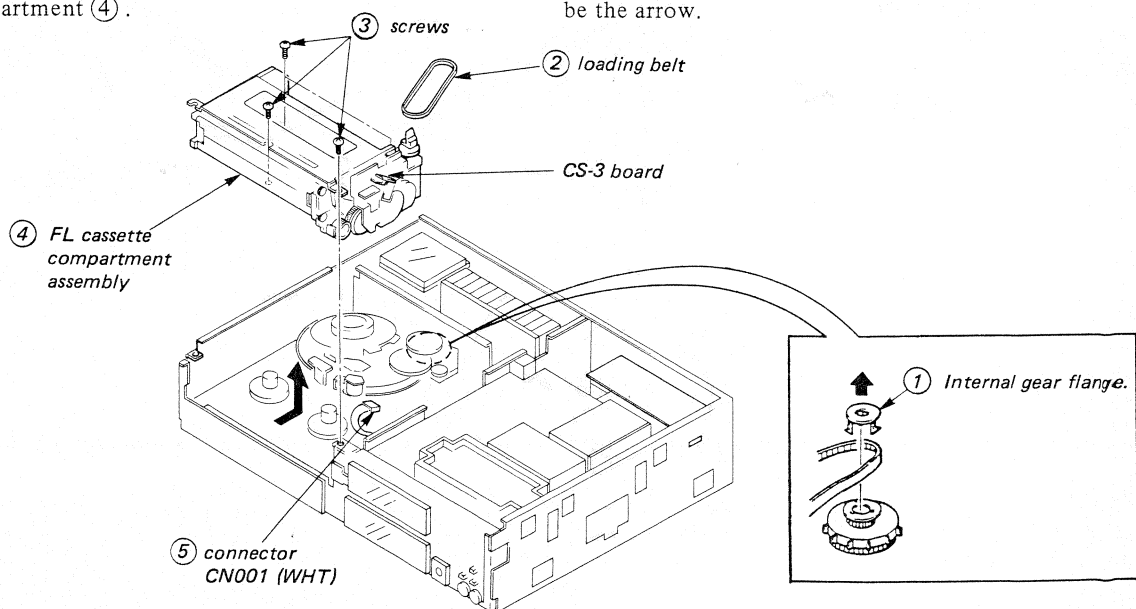
2-2. PS-28 BOARD AND VOLTAGE SELECTOR SWITCH REMOVAL

- 1) Remove the two screws ①.
- 2) Remove the power cord bracket ②.
- 3) Remove the four screws ③.
- 4) Remove the power transformer ④.
- 5) Remove the PS-28 board.
- 6) Remove the two screws ⑤. (E Model)
- 7) Remove the voltage selector switch on the VS-2 board ⑥. (E Model)



2-3. FL CASSETTE COMPARTMENT ASSEMBLY REMOVAL

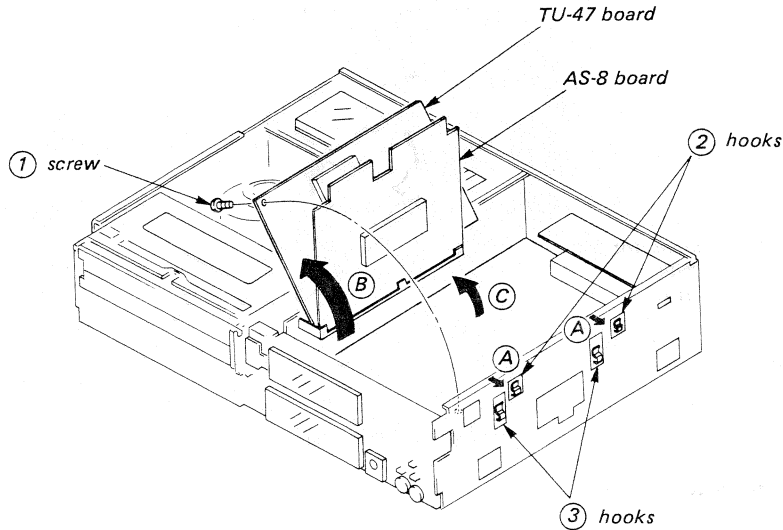
- 1) Remove the internal gear flange ①.
- 2) Loosen the loading belt ② and remove it from the threading motor.
- 3) Remove the four mounting screws ③ of the FL cassette compartment ④.
- 4) Disconnect the exposed connector ④ from the CS-3 board (CN001 ⑤) on the FL cassette compartment assembly, and remove the FL cassette compartment assembly in the direction shown by the arrow.



2-4. TU-47 BOARD AND AS-8 BOARD REMOVAL

- 1) Remove the one screw ①.
- 2) Unlock the two hooks ② of holders in the direction of arrow ④.
- 3) Open the TU-47 board in the direction of the arrow ⑤.

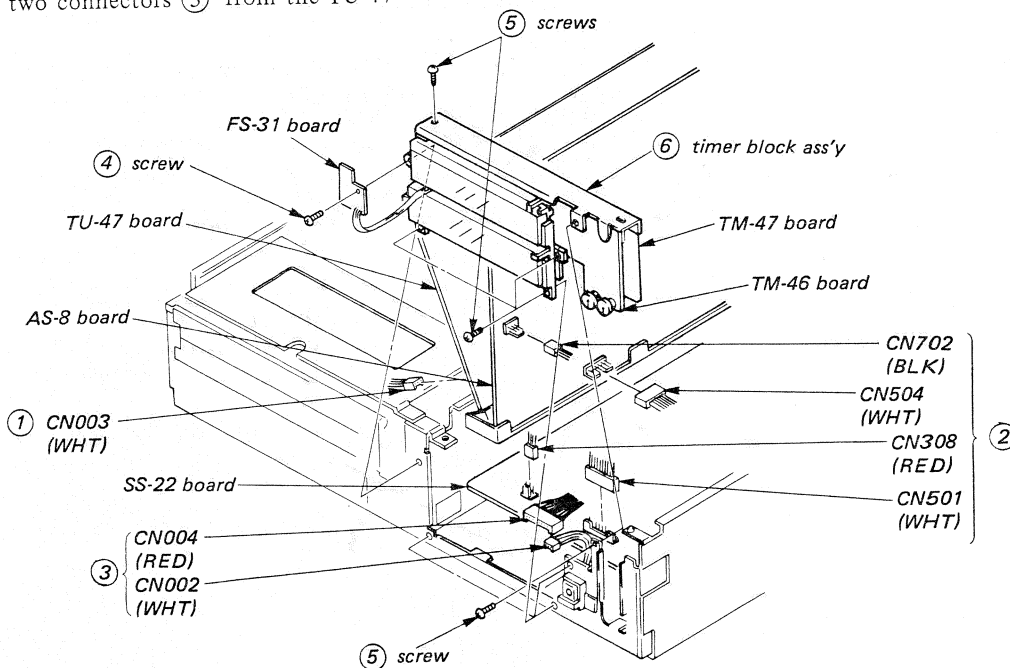
- 4) Unlock the two hooks ③ of holders in the direction of arrow ④.
- 5) Open the AS-8 board in the direction of the arrow ⑤.



2-5. TIMER BLOCK ASS'Y REMOVAL

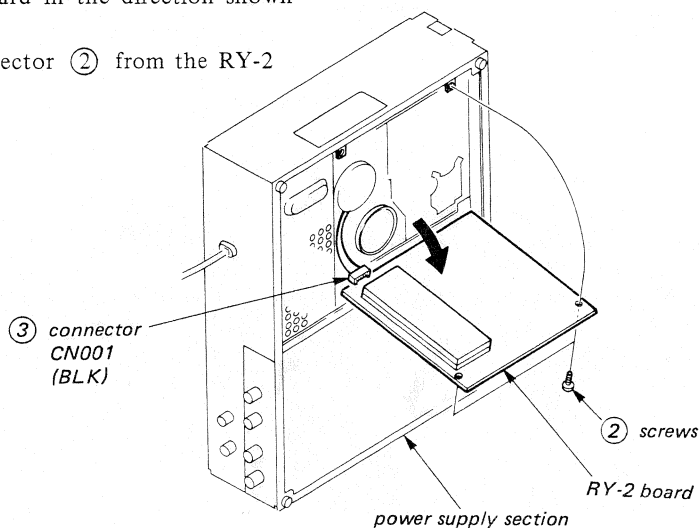
- 1) Pull out the one connector ① from the TU-47 board.
- 2) Pull out the four connectors ② from the SS-22 and AS-8 boards.
- 3) Pull out the two connectors ③ from the TU-47 board.

- 4) Remove the one screw ④ and the FS-31 board.
- 5) Remove the five screws ⑤.
- 6) Remove the timer block ass'y ⑥.



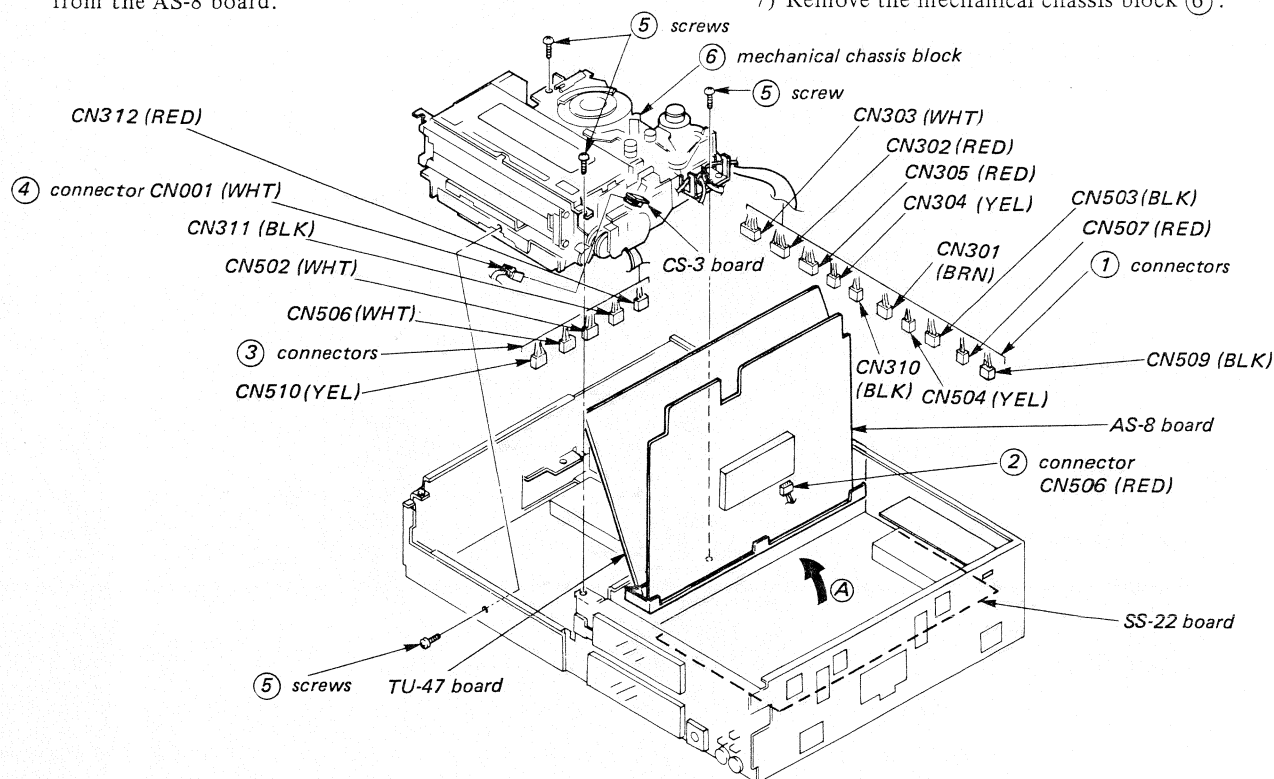
2-6-1. MECHANICAL CHASSIS BLOCK REMOVAL

- 1) Stand the set with its power supply section down.
- 2) Remove the two screws ①, holding the RY-2 board.
- 3) Remove the RY-2 board in the direction shown by the arrow.
- 4) Pull out the one connector ② from the RY-2 board.



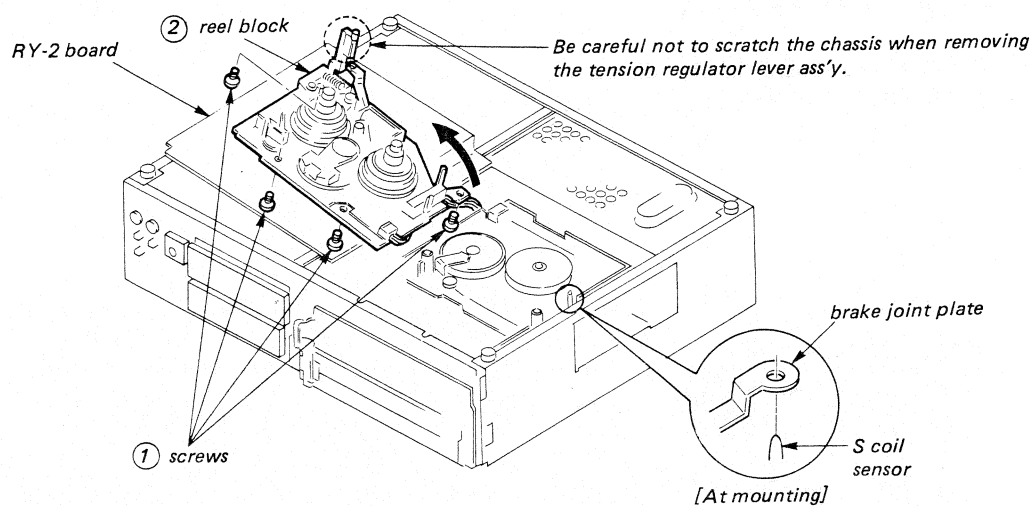
2-6-2. MECHANICAL CHASSIS BLOCK REMOVAL

- 1) Open the TU-47 board and AS-8 board in the direction of the arrow ④.
- 2) Pull out the ten connectors ① from the SS-22 board.
- 3) Pull out the one connector CN506 (RED) ② from the AS-8 board.
- 4) Pull out the five connectors ③ from the AS-8 board.
- 5) Pull out the one connector CN001 (WHT) ④ from the CS-3 board.
- 6) Remove the four screws ⑤.
- 7) Remove the mechanical chassis block ⑥.



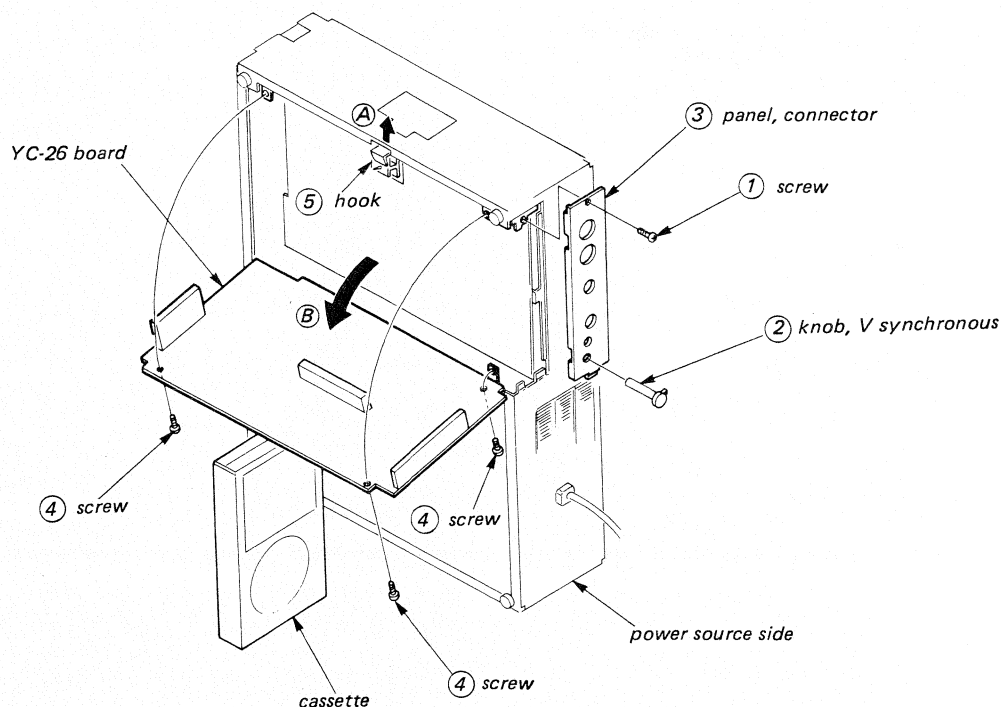
2-7. REEL ASS'Y REMOVAL

- 1) Remove the four screws ①.
- 2) Remove the reel block ②.



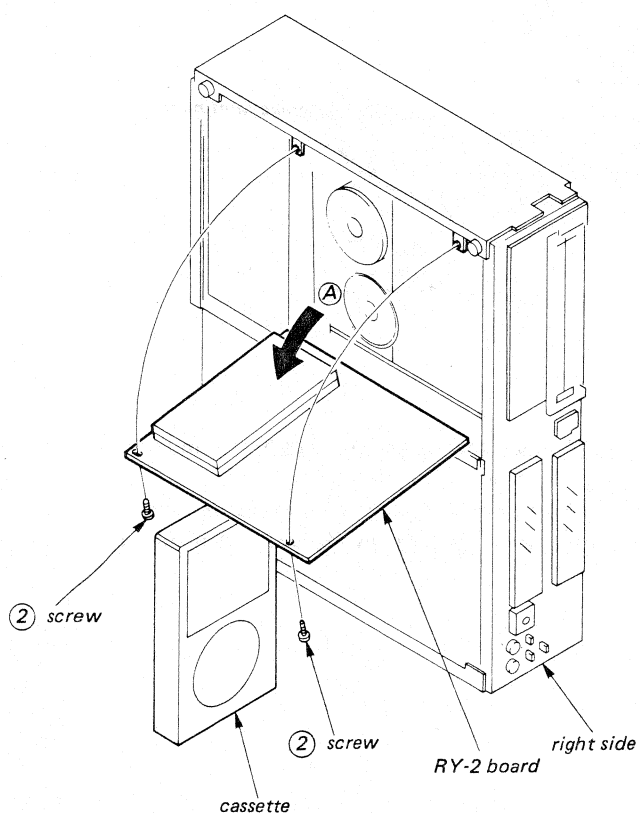
2-8. YC-26 BOARD REMOVAL

- 1) Stand the set with the power source side the bottom.
- 2) Remove the one screw ① and the knob, V synchronous ②.
- 3) Remove the panel, connector ③.
- 4) Remove the three screws ④, holding the YC-26 board.
- 5) Unlock the one hook ⑤ of holder in the direction of arrow A.
- 6) Swing open the YC-26 board in the direction shown by the arrow B and rest it on a cassette.



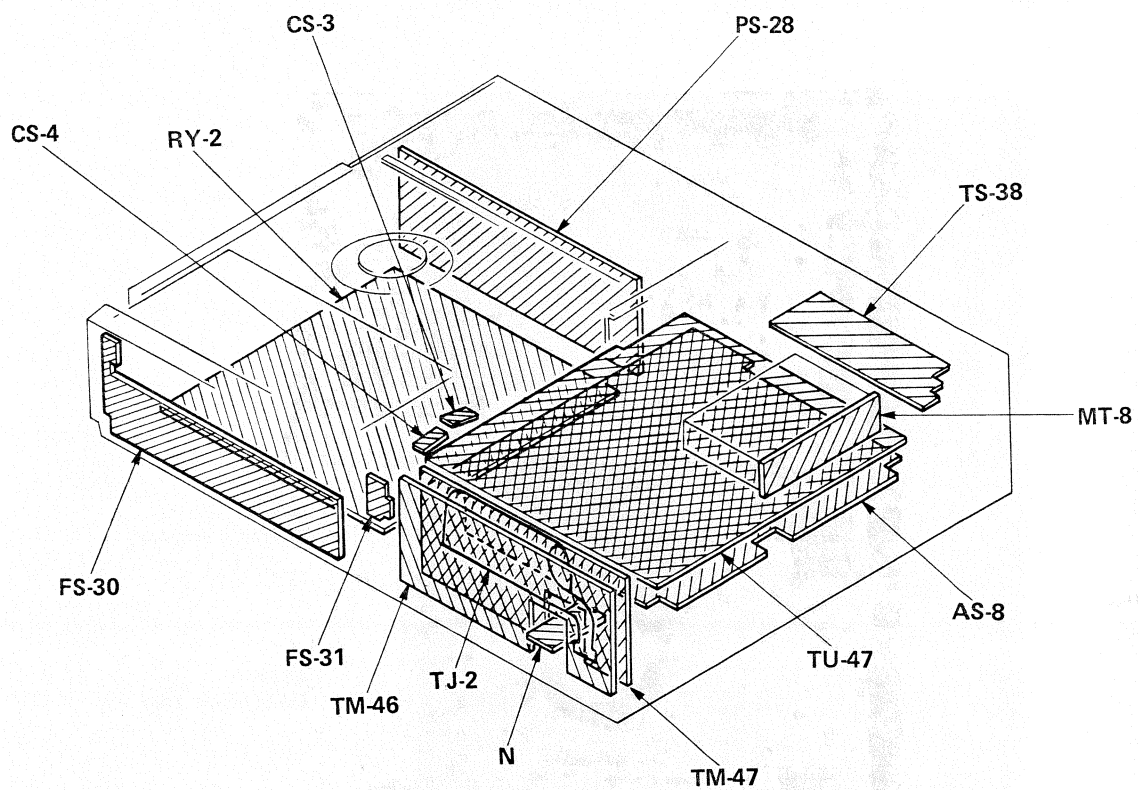
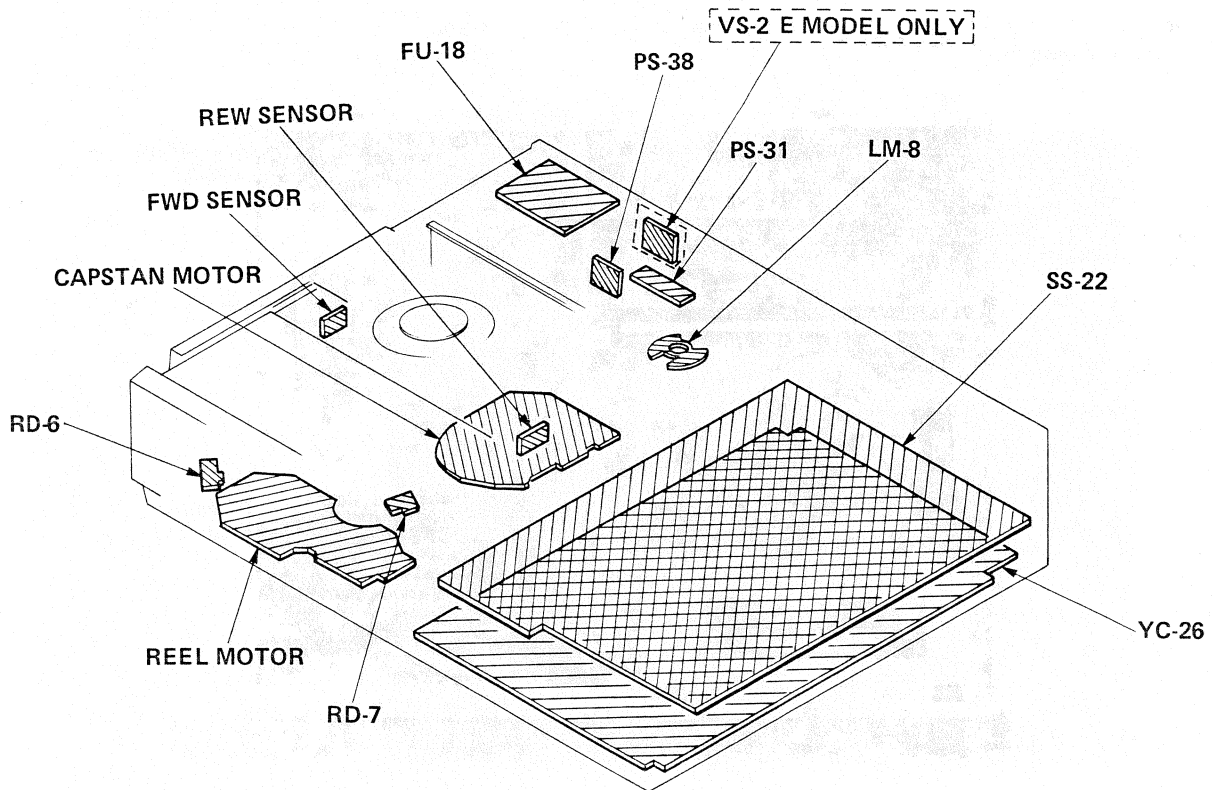
2-9. RY-2 BOARD REMOVAL

- 1) Stand the set with the right side panel on the bottom.
- 2) Remove the two screws ②, holding the RY-2 board.
- 3) Swing open the RY-2 board in the direction shown by the arrow ① and rest it on a cassette.



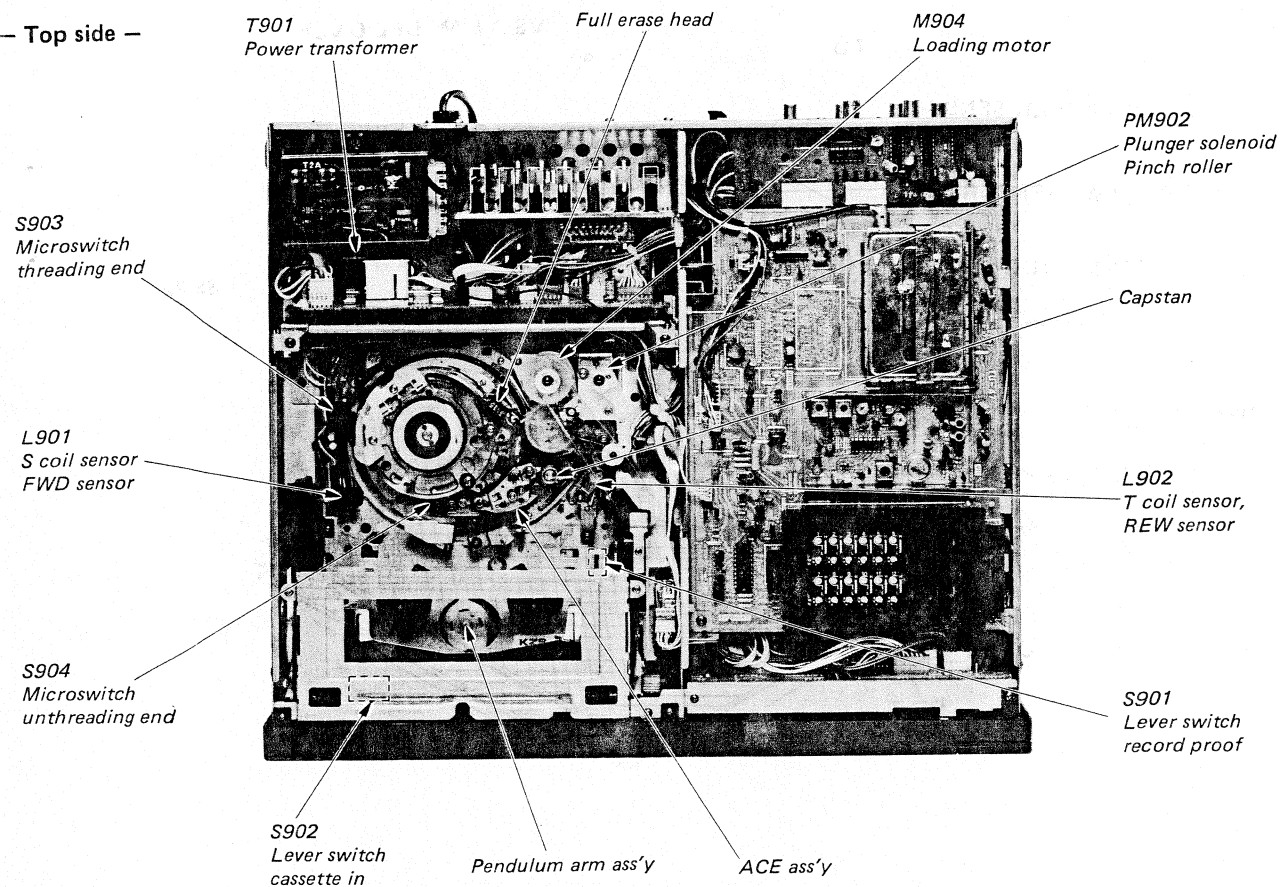
SECTION 3 DIAGRAMS

3-1. CIRCUIT BOARDS LOCATION

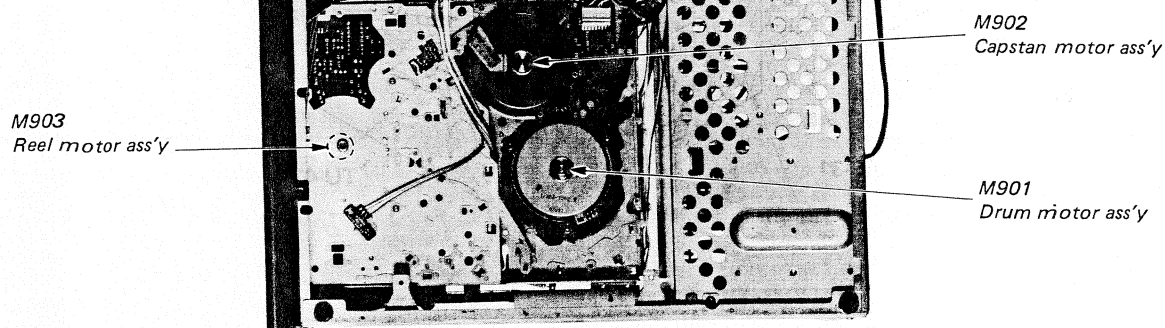


2-10. INSIDE VIEWS

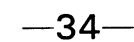
— Top side —



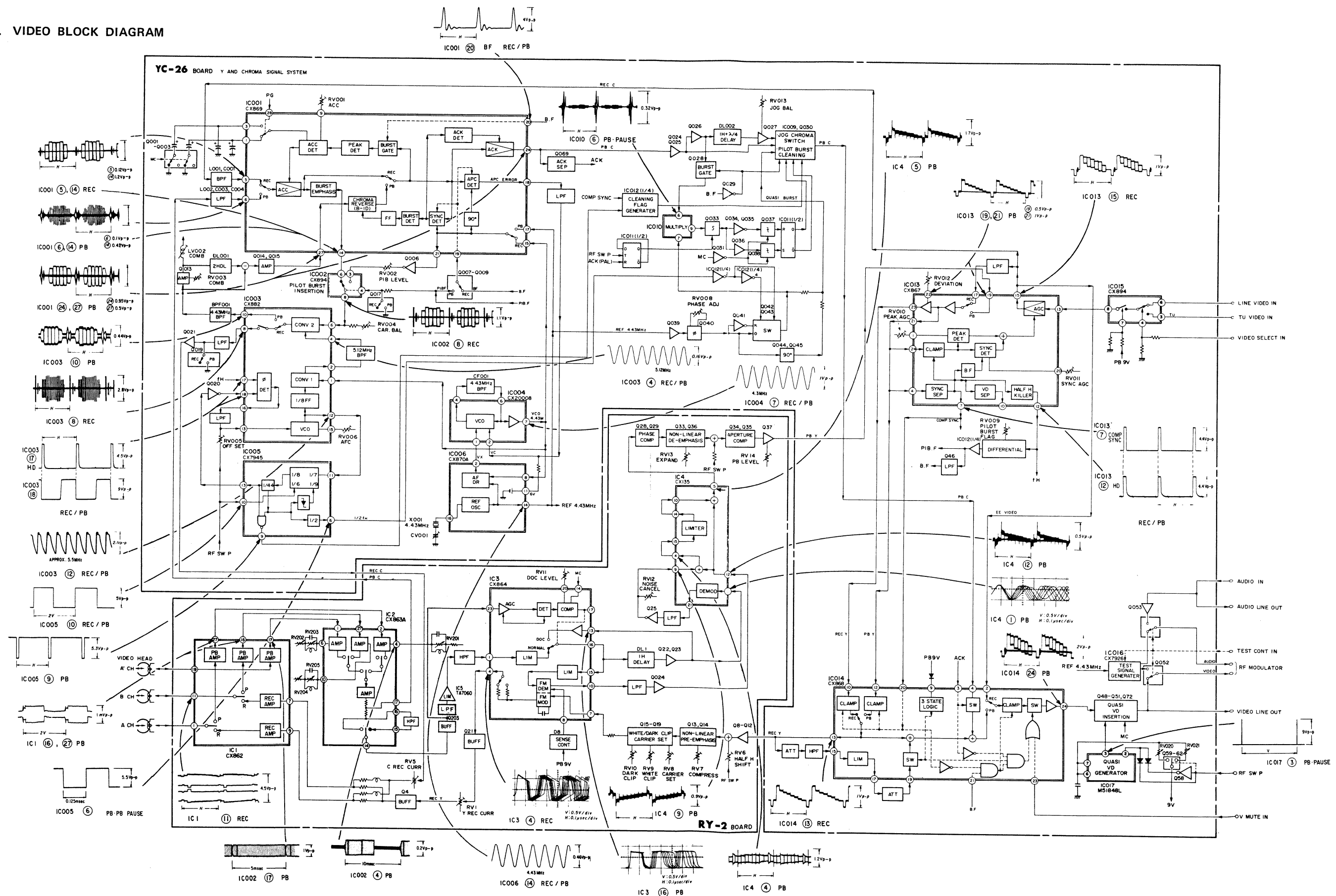
— Bottom side —



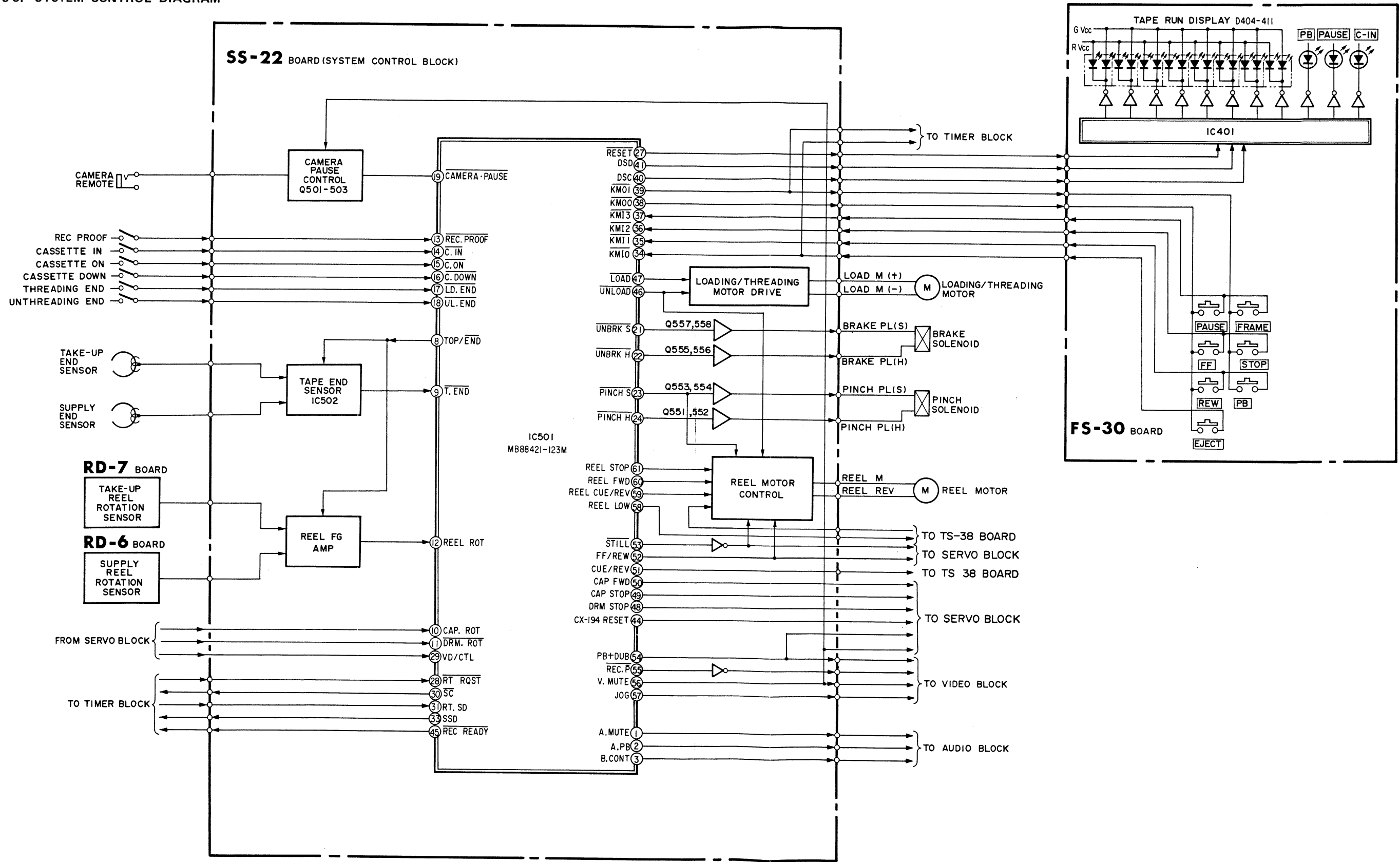
—33—



3-3. VIDEO BLOCK DIAGRAM



3-5. SYSTEM CONTROL DIAGRAM



3-6. SYSTEM CONTROL CIRCUIT AND VIDEO CIRCUIT INTERFACE

MODE			STOP						FF	REW	FR SEARCH		PLAY BACK					REC		TIMER REC
SIGNAL	I/O	Pin No.	EJECTED	CLOAD	TLOAD	READY	TUNLD	CUNLD			CUE	REV	PB	PAUSE	CUE	REV	FRAME	REC	PAUSE	
V-MUTE	O	IC501 (56)	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
JOG	O	IC501 (57)	L	L	L	L	L	L	L	L	H	H	L	H	H	H	H	L	L	L
STILL	O	IC501 (53)	H	H	H	H	H	H	H	H	H	H	H	L	H	H	H/L	H	H	H
REC-P	O	IC501 (55)	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H
PB+DUB	O	IC501 (54)	L	L	L	L	L	L	L	L	H	H	H	H	H	H	H	L	L	L

3-7. SYSTEM CONTROL CIRCUIT AND SERVO CIRCUIT INTERFACE

MODE			STOP						FF	REW	FR SEARCH		PLAY BACK					REC		TIMER REC
SIGNAL	I/O	Pin No.	EJECTED	CLOAD	TLOAD	READY	TUNLD	CUNLD			CUE	REV	PB	PAUSE	CUE	REV	FRAME	REC	PAUSE	
DRM ROT	I	IC501 (11)	H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L
CAP ROT	I	IC501 (10)	L	L	L	L	L	L	L	L	H	H	H	L	H	H	H/L	H	H	H
VD/CTL	I	IC501 (29)	—	—	—	—	—	—	CTL	CTL	CTL	CTL	CTL	—	CTL	CTL	CTL	VD	—	VD
SW PULSE		IC501 (7)															sw pulse			
DRM STP	O	IC501 (48)	H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L
CAP STP	O	IC501 (49)	H	H	H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L
CAP FWD	O	IC501 (50)	H	H	H	H	H	H	H	H	H	L	H	H	H	H	H	H	H	H
CUE/REV	O	IC501 (51)	L	L	L	L	L	L	L	L	H	H	L	L	H	H	L	L	L	L
REC-PAUSE	O	IC501 (55)	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H
PB+DUB	O	IC501 (54)	L	L	L	L	L	L	L	L	H	H	H	H	H	H	H	L	L	L
STILL	O	IC501 (53)	H	H	H	H	H	H	H	H	H	H	H	L	H	H	H/L	H	H	H
FF/REW	O	IC501 (52)	L	L	L	L	L	L	H	H	L	L	L	L	L	L	L	L	L	L
CX194 RESET	O	IC501 (27)	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L

3-8. SYSTEM CONTROL CIRCUIT AND REEL MOTOR CONTROL CIRCUIT INTERFACE

MODE SIGNAL I/O Pin No.			STOP						FF	REW	FR SEARCH		PLAY BACK					REC		TIMER REC
			EJECTED	CLOAD	TLOAD	READY	TUNLD	CUNLD			CUE	REV	PB	PAUSE	CUE	REV	FRAME	REC	PAUSE	
REEL ROT	I	IC501 (12)			p*1		p*1		p*1	p*1	p*1	p*1	p*1		p*1	p*1	p*1	p*1		p*1
REEL STOP	O	IC501 (61)	H	H	L	H	L	H	L	L	L	L	L	L	L	L	L	L	H	L
REEL FWD	O	IC501 (60)	H	H	H	H	L	H	H	L	H	L	H	H	H	L	H	H	H	H
REEL CUE/REV	O	IC501 (59)	L	L	L	L	L	L	L	L	H	H	L	L	H	H	L	L	L	L
REEL LOW	O	IC501 (58)	L	L	H	L	H	L	L	L	L	L	H	H	L	L	L	H	H	H
FF/REW	O	IC501 (52)	L	L	L	L	L	L	H	H	L	L	L	L	L	L	L	L	L	L
STILL	O	IC501 (53)	H	H	H	H	H	H	H	H	H	H	H	L	H	H	H/L	H	H	H
PINCH S	O	IC501 (23)	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
UNLOAD	O	IC501 (46)	H	H	H	H	L	L	H	H	H	H	H	H	H	H	H	H	H	H

*1 ... Pulse

3-9. SYSTEM CONTROL CIRCUIT AND AUDIO CIRCUIT INTERFACE

MODE SIGNAL I/O Pin No.			STOP						FF	REW	FR SEARCH		PLAY BACK					REC		TIMER REC
			EJECTED	CLOAD	TLOAD	READY	TUNLD	CUNLD			CUE	REV	PB	PAUSE	CUE	REV	FRAME	REC	PAUSE	
A-MUTE	O	IC501 (1)	L	L	L	L	L	L	L	L	H	H	L	H	H	H	H	L	L	L
B-CONT	O	IC501 (3)	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	L	H
REC-P	O	IC501 (55)	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	L
A-PB	O	IC501 (2)	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	L	L	L

3-10. SYSTEM CONTROL CIRCUIT AND REMOTE CONTROL/TIMER CIRCUIT INTERFACE

MODE SIGNAL I/O Pin No.			STOP						FF	REW	FR SEARCH		PLAY BACK					REC		TIMER REC
			EJECTED	CLOAD	TLOAD	READY	TUNLD	CUNLD			CUE	REV	PB	PAUSE	CUE	REV	FRAME	REC	PAUSE	
RTROST	I	IC501 (28)																		
RTSD	I	IC501 (31)																		
SSD	O	IC501 (33)																		
SC	O	IC501 (30)																		
REC READY	O	IC501 (45)	H	H	H	H/L	H	H	H	H	H	H	H	H	H	H	H	H	H	L

3-11. SYSTEM CONTROL AND FUNCTION BLOCK INTERFACE

MODE SIGNALI/OPin No.			STOP						FF	REW	FR SEARCH		PLAY BACK					REC		TIMER REC
			EJECTED	CLOAD	TLOAD	READY	TUNLD	CUNLD			CUE	REV	PB	PAUSE	CUE	REV	SLOW	REC	PAUSE	
KMI 0	I	IC501 34	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
KMI 1	I	IC501 35	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
KMI 2	I	IC501 36	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
KMI 3	I	IC501 37	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
CAMERA PAUSE	I	IC501 19	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
KMQ 0	O	IC501 38	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
KMQ 1	O	IC501 39	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
DSD	O	IC501 41																		
DSC	O	IC501 40																		

3-12. SYSTEM CONTROL CIRCUIT AND ITS PERIPHERAL CIRCUIT INTERFACE

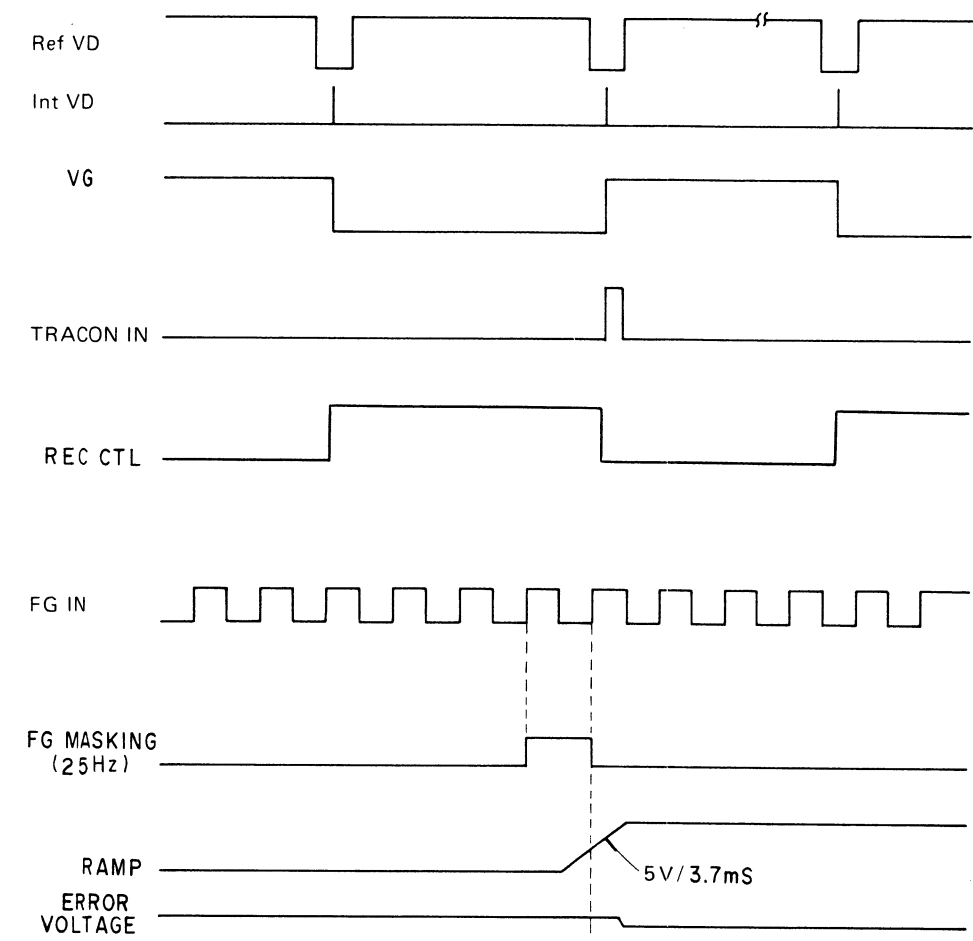
MODE SIGNALI/OPin No.			STOP						FF	REW	FR SEARCH		PLAY BACK					REC		TIMER REC
			EJECTED	CLOAD	TLOAD	READY	TUNLD	CUNLD			CUE	REV	PB	PAUSE	CUE	REV	SLOW	REC	PAUSE	
TAPE END *1	I	IC501 9	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
TOP / END	O	IC501 8	L	L	L	L	L	L	L	H	L	H	L	L	L	H	L	L	L	L

*1 . . . "L" at tape end

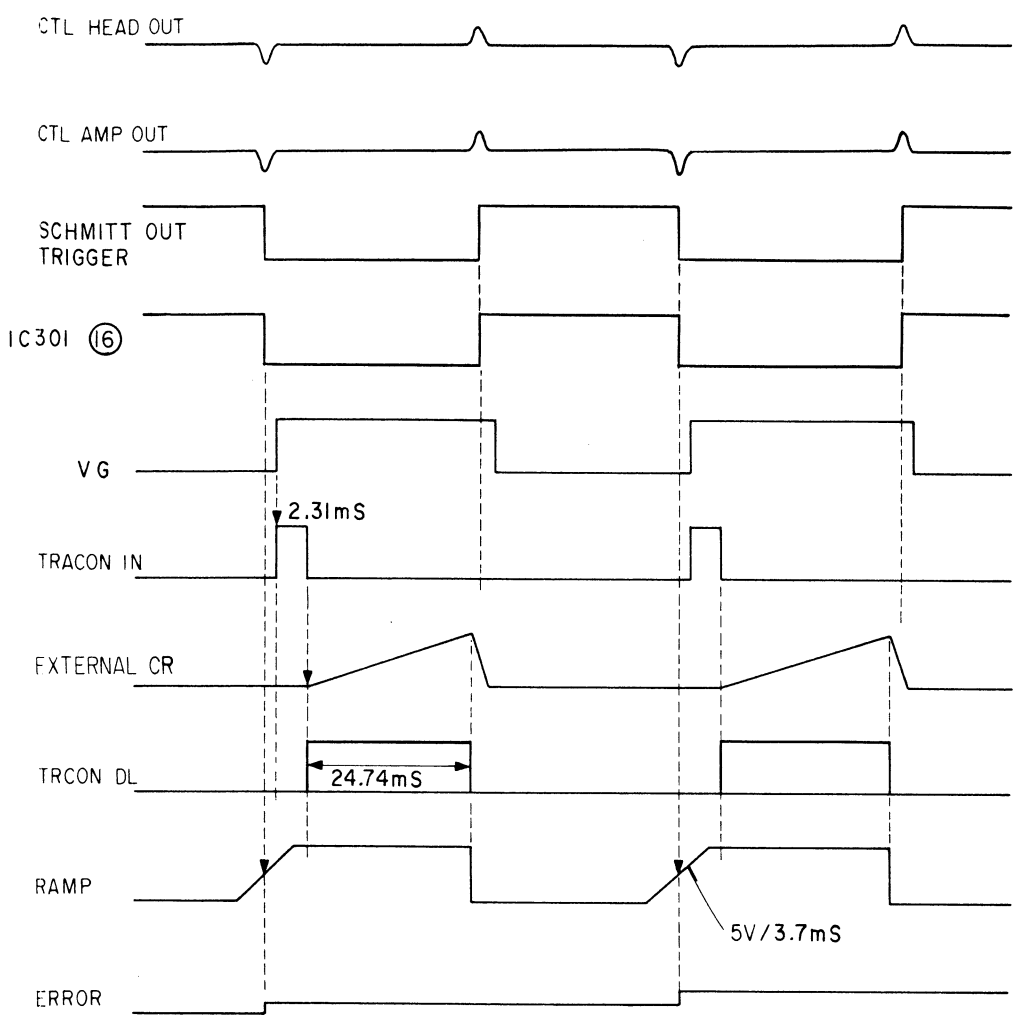
3-13. SYSTEM CONTROL CIRCUIT AND MECHANISM BLOCK INTERFACE

MODE SIGNALI/OPin No.			STOP						FF	REW	FR SEARCH		PLAY BACK					REC		TIMER REC
			EJECTED	CLOAD	TLOAD	READY	TUNLD	CUNLD			CUE	REV	PB	PAUSE	CUE	REV	FRAME	REC	PAUSE	
REC-PROOF	I	IC501 13	—	—	H/L	H/L	H/L	—	H/L	H/L	H/L	H/L	H/L	H/L	H/L	H/L	H/L	L	L	L
CASSETTE-IN	I	IC501 14	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
CASSETTE-ON	I	IC501 15	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
CASSETTE-DOWN	I	IC501 16	H	H	L	L	L	H	L	L	L	L	L	L	L	L	L	L	L	L
LOAD-END	I	IC501 17	H	H	H	L	H	H	L	L	L	L	L	L	L	L	L	L	L	L
UNLOAD-END	I	IC501 18	L	L	H	H	H	L	H	H	H	H	H	H	H	H	H	H	H	H
UNBRAKE-S	O	IC501 21	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
UNBRAKE-H	O	IC501 22	H	H	L	H	L	H	L	L	L	L	L	L	L	L	L	L	L	L
PINCH-S	O	IC501 23	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
PINCH-H	O	IC501 24	H	L	H	H	H	L	H	H	H	H	L	L	L	L	L	L	H	L
LOAD	O	IC501 47	H	L	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
UNLOAD	O	IC501 46	H	H	H	H	L	L	H	H	H	H	H	H	H	H	H	H	H	H

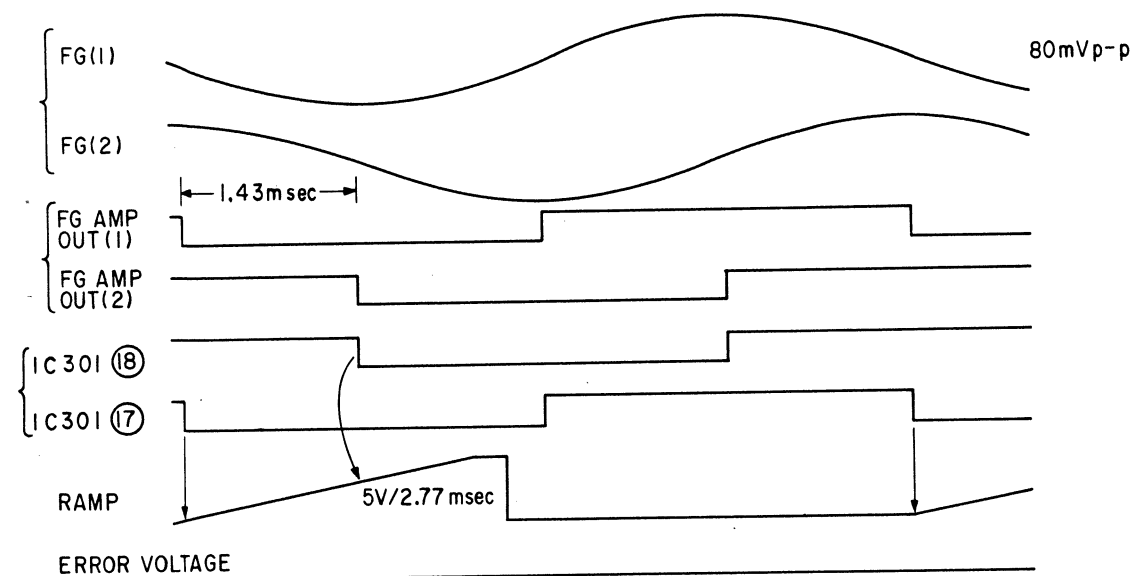
3-14. CAPSTAN PHASE SYSTEM TIMING CHART (REC)



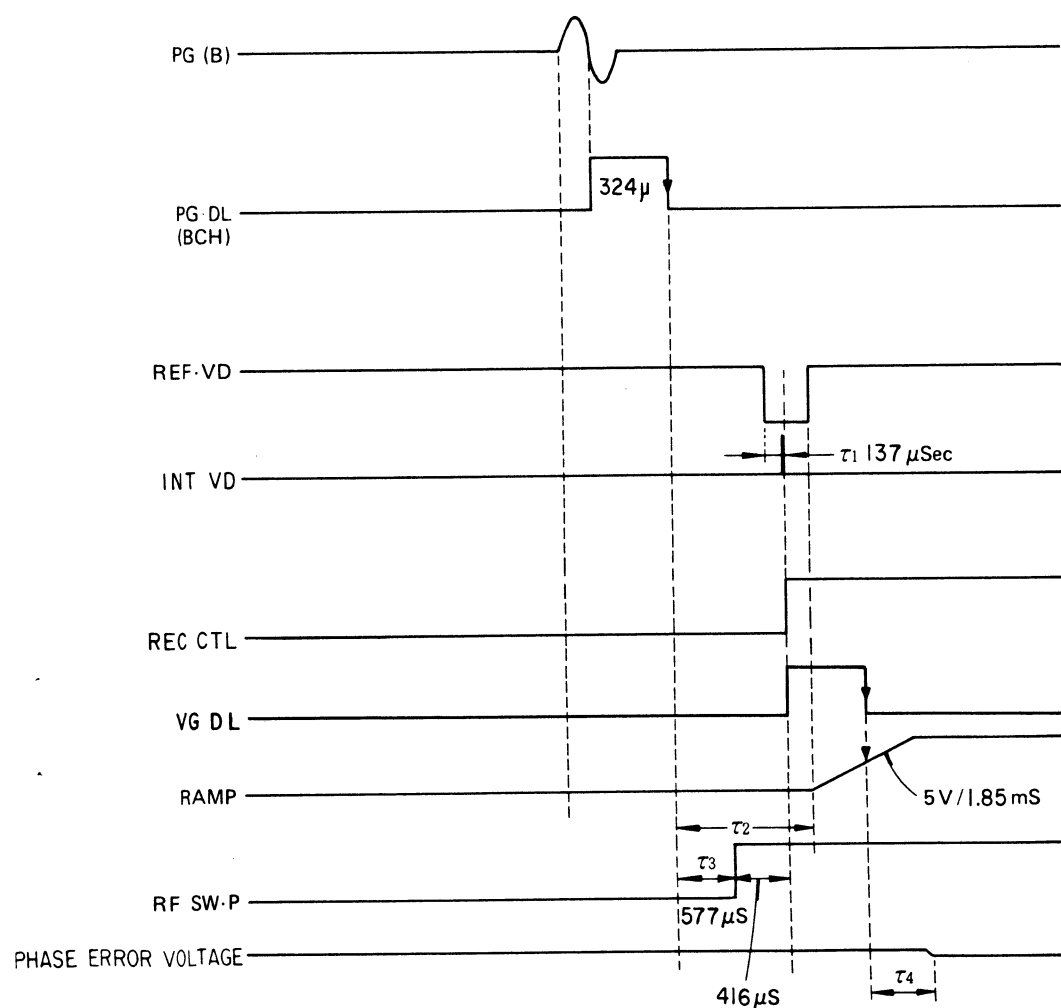
3-15. CAPSTAN PHASE SYSTEM TIMING CHART (PB)



3-16. CAPSTAN SPEED SYSTEM TIMING CHART

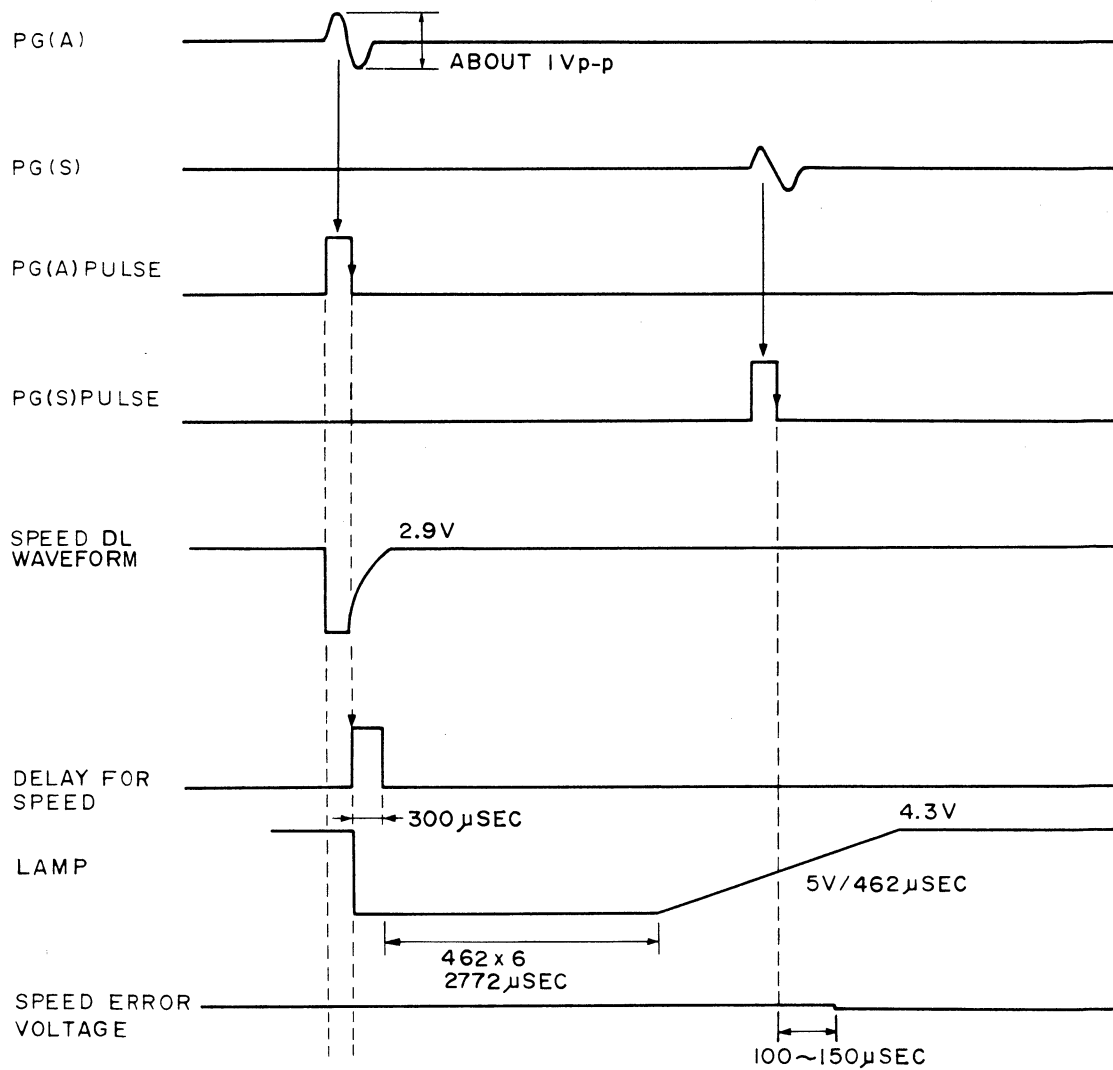


3-17. DRUM PHASE SYSTEM TIMING CHART

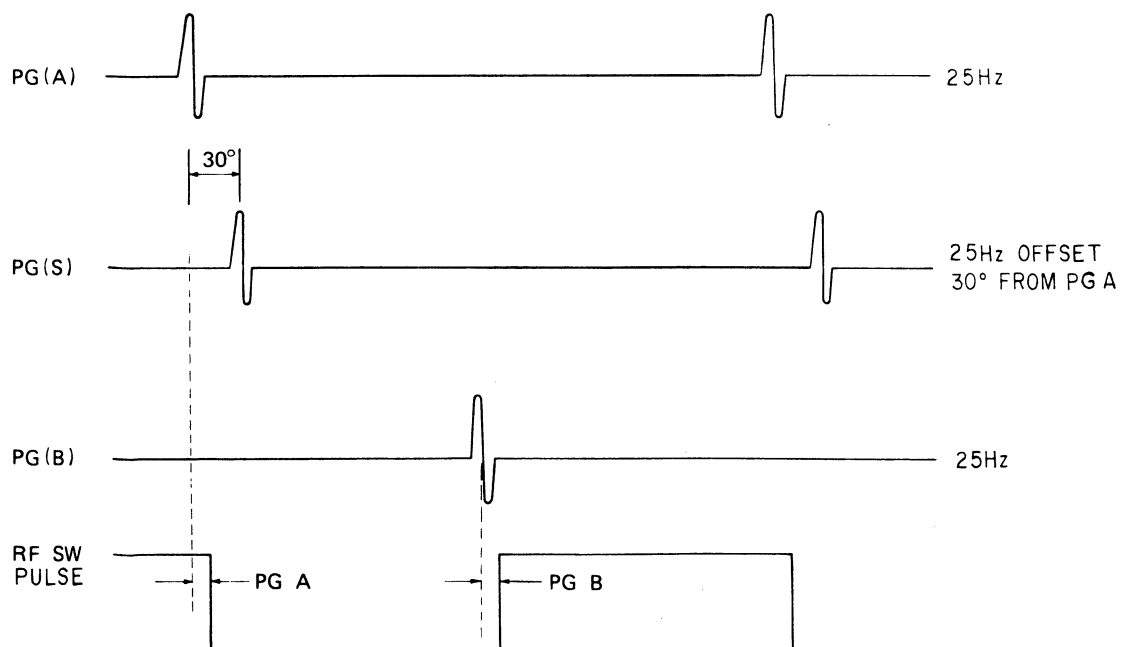


τ_1 REF VD DETECTION DELAY TIME
 $\tau_{2,3}$ DIGITAL DL
 τ_4 DATA EXCHANGE TIME

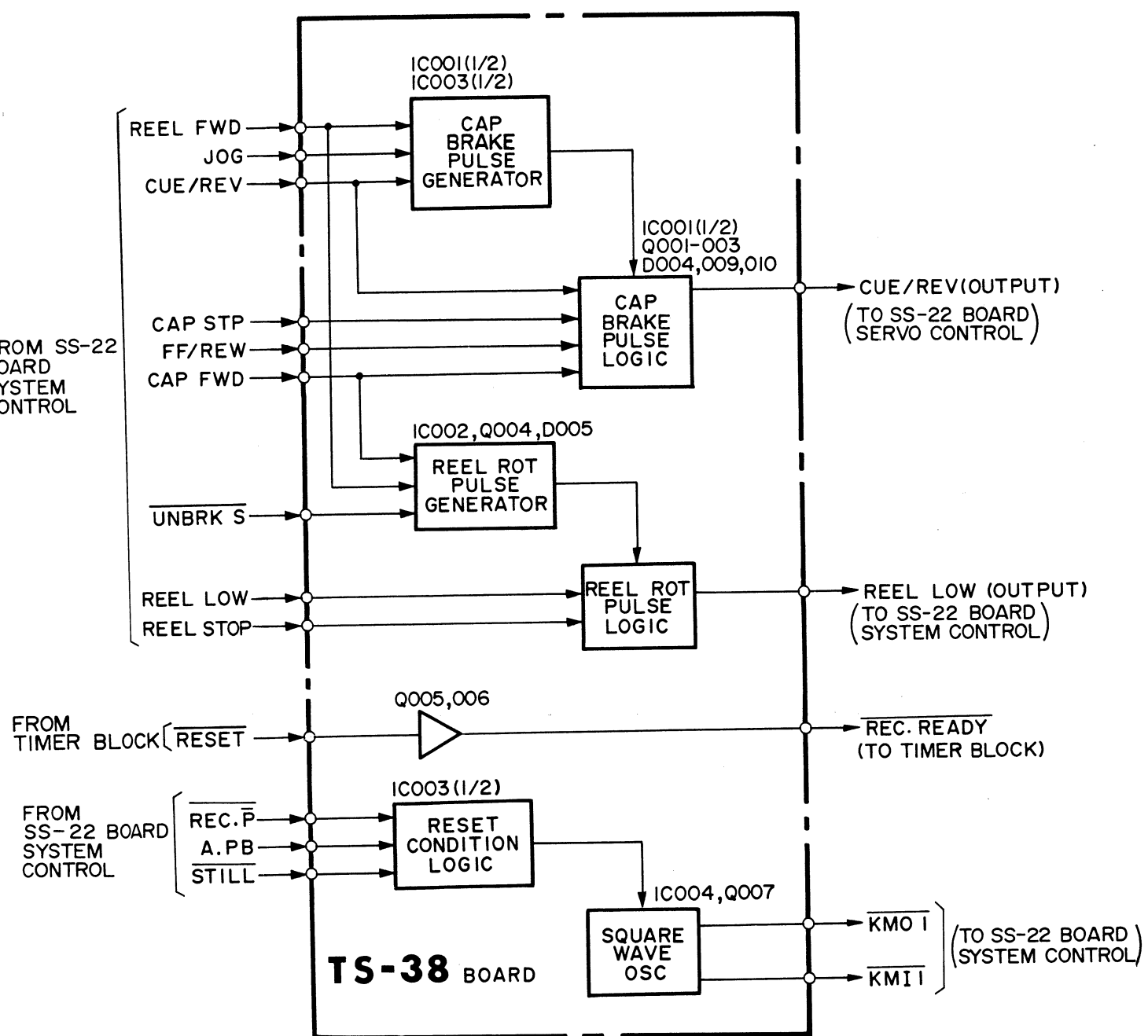
3-18. DRUM SPEED SYSTEM TIMING CHART



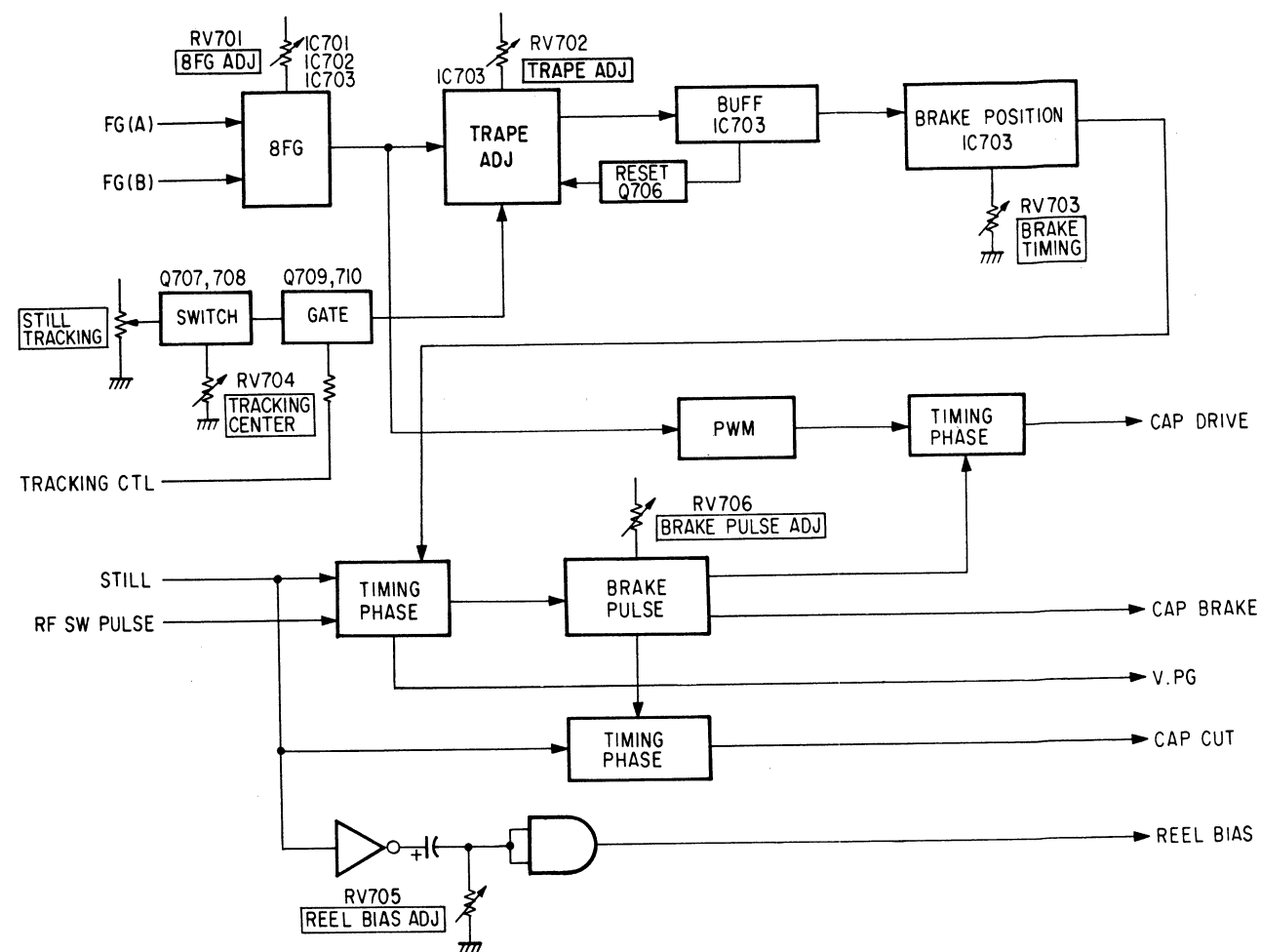
3-19. PG SIGNAL TIMING CHART



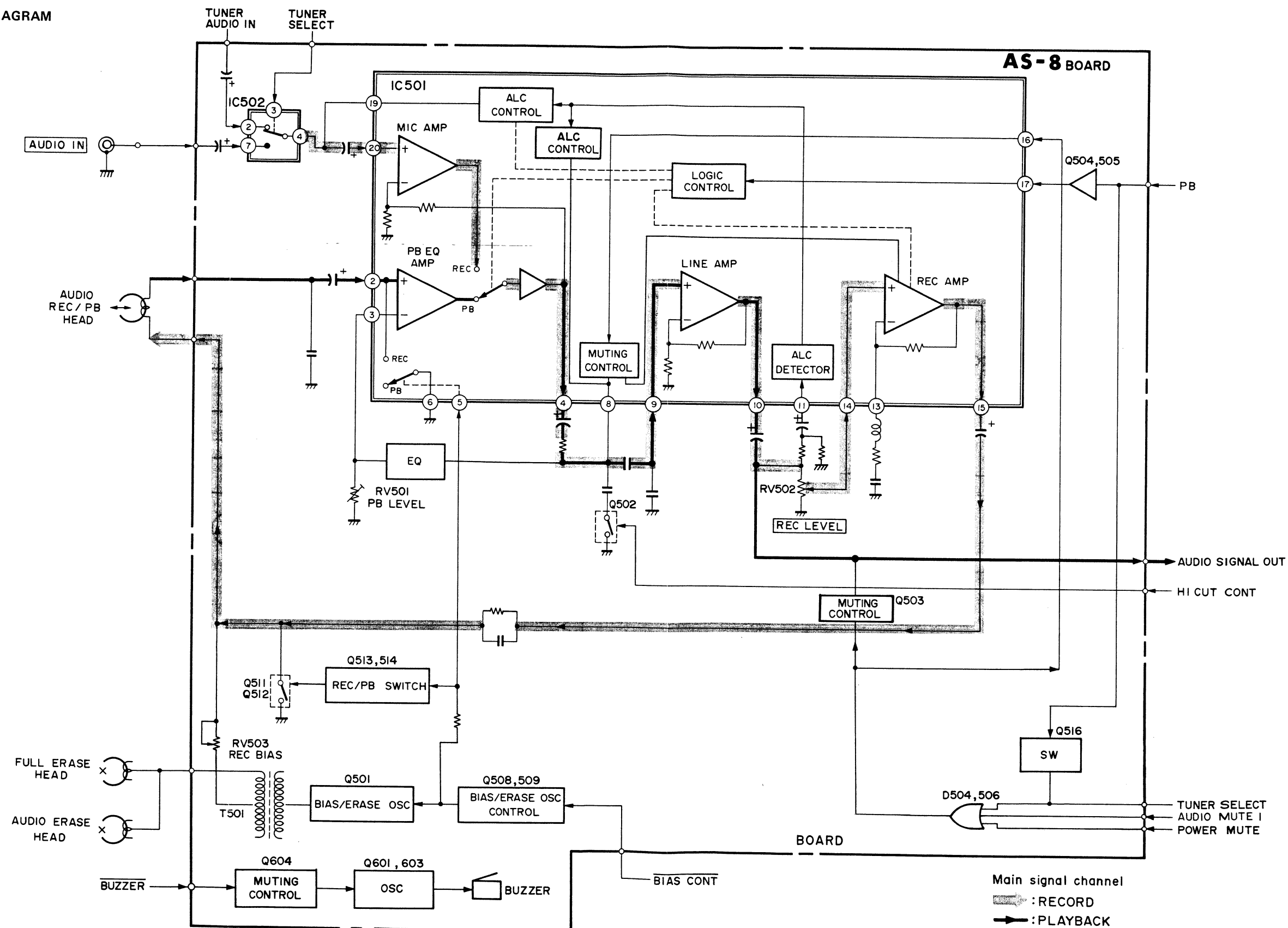
3-20. SUB SYSTEM CONTROL BLOCK DIAGRAM



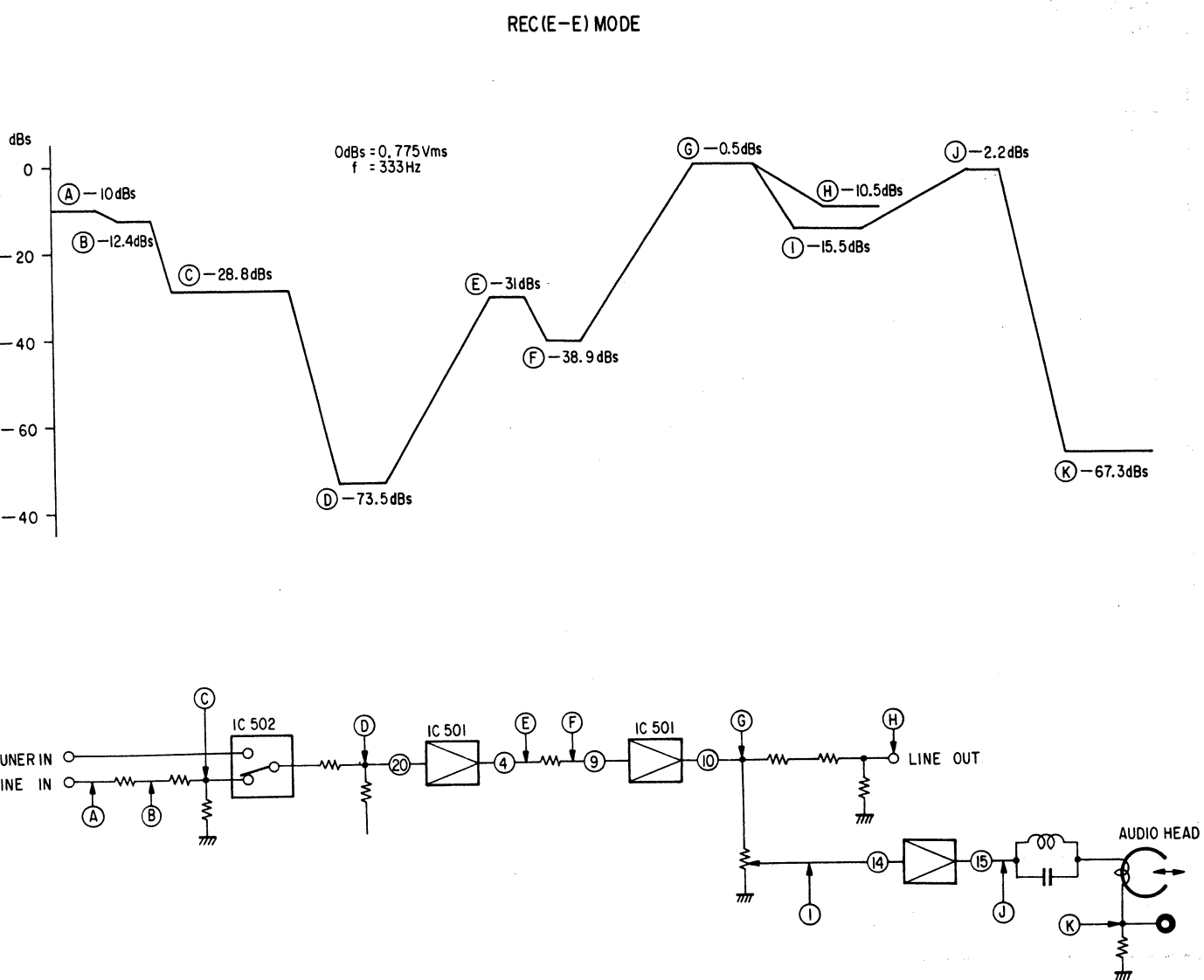
3-21. VIDEOLA BLOCK DIAGRAM (AS-8 BOARD)



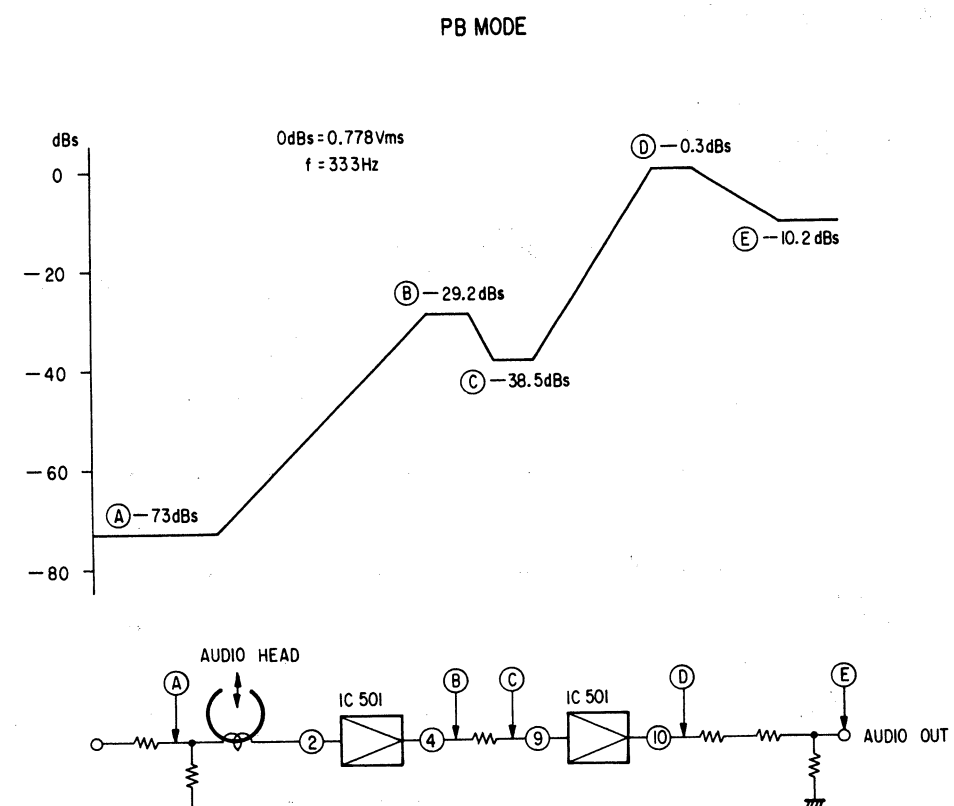
3-22. AUDIO BLOCK DIAGRAM



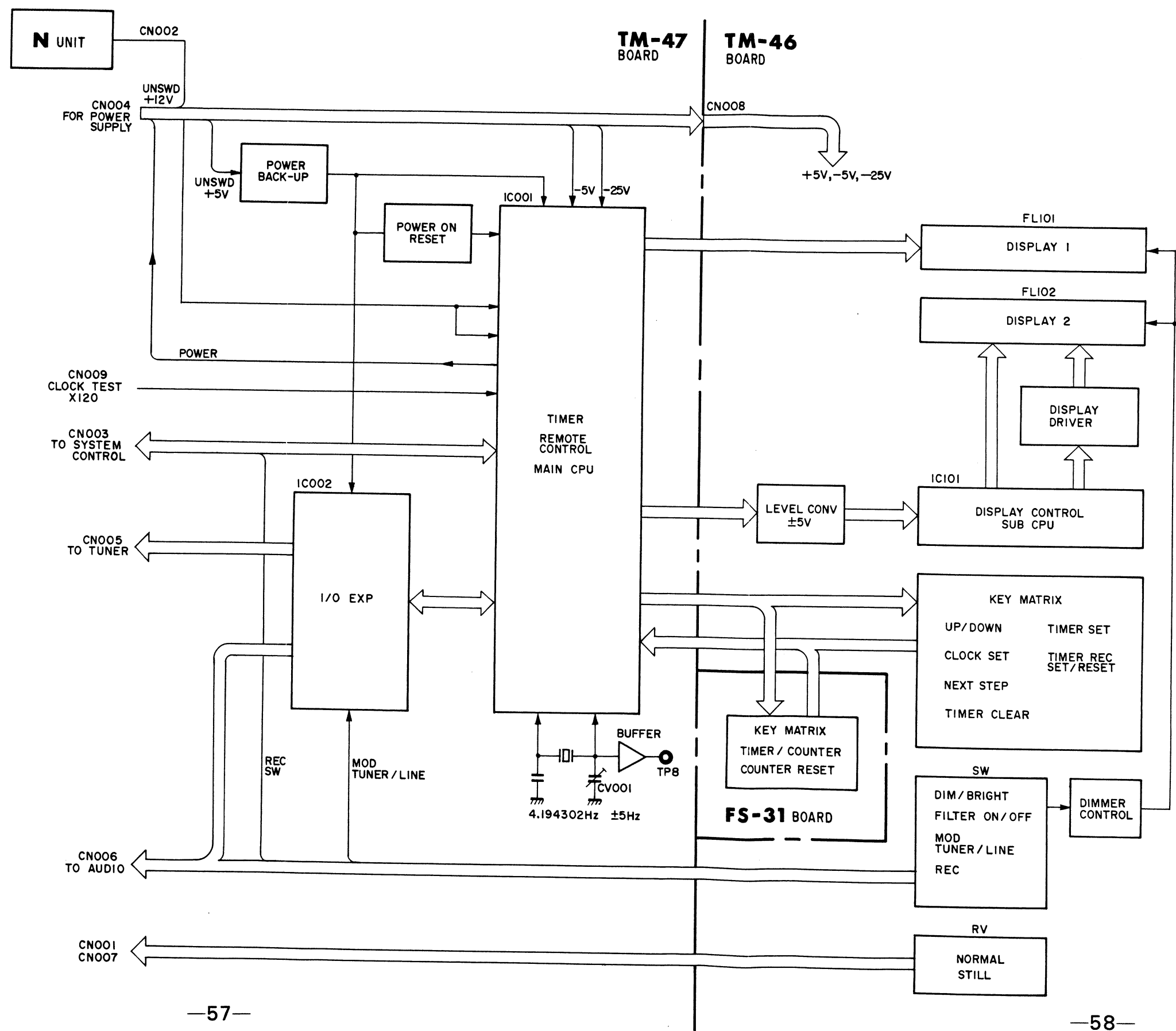
3-23. AUDIO LEVEL DIAGRAM (REC)

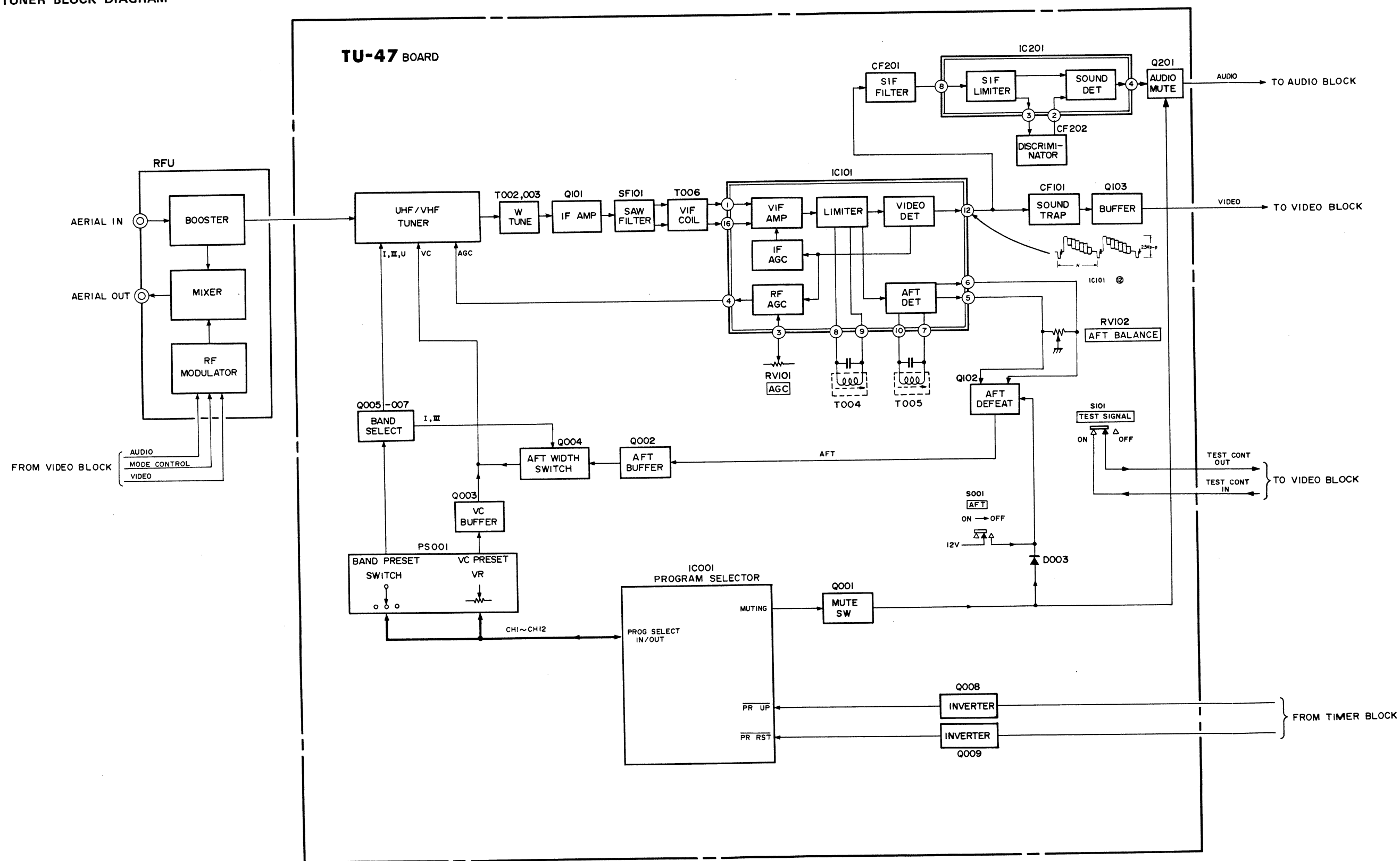


3-24. AUDIO LEVEL DIAGRAM (PB)

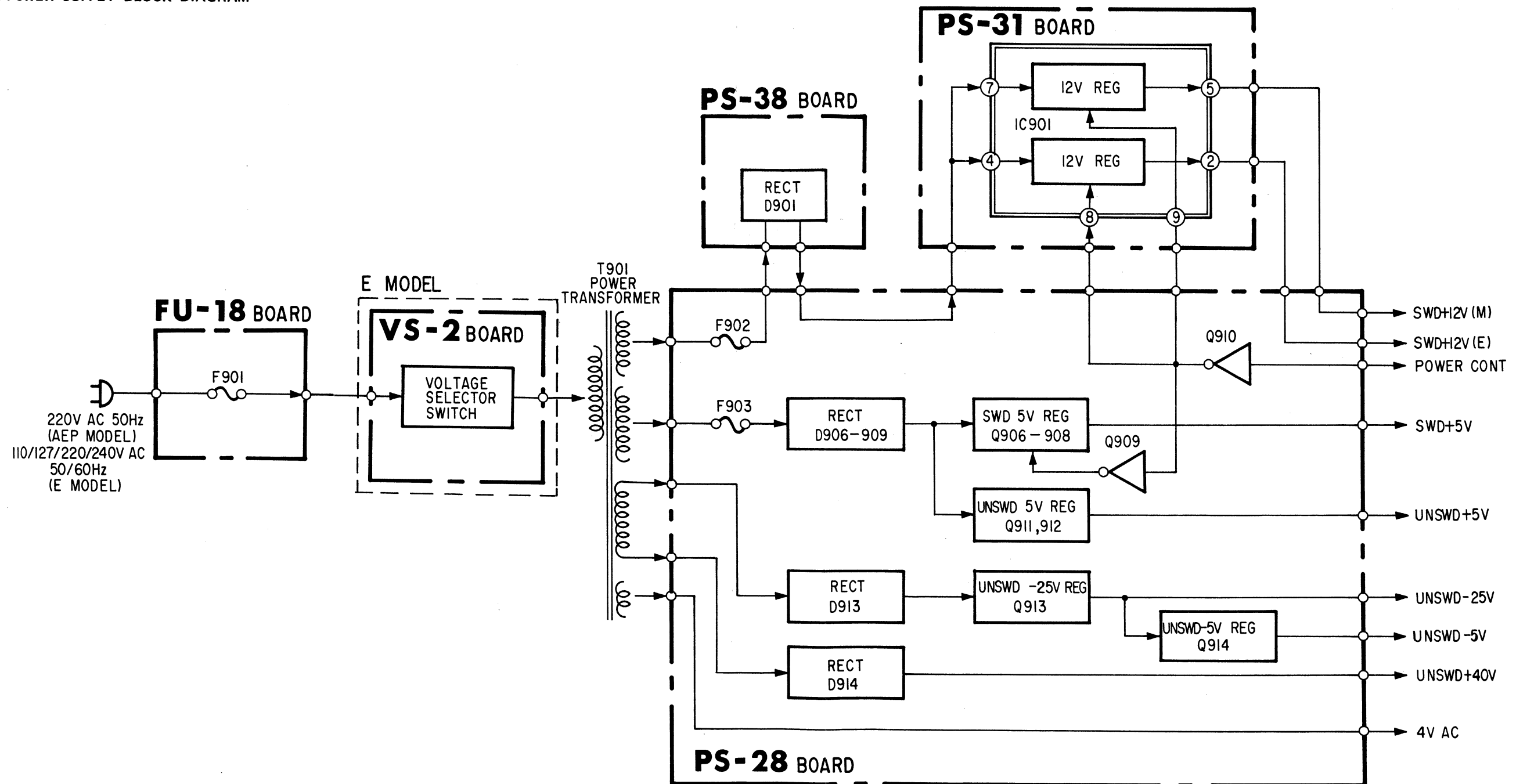


3-25. TIMER BLOCK DIAGRAM





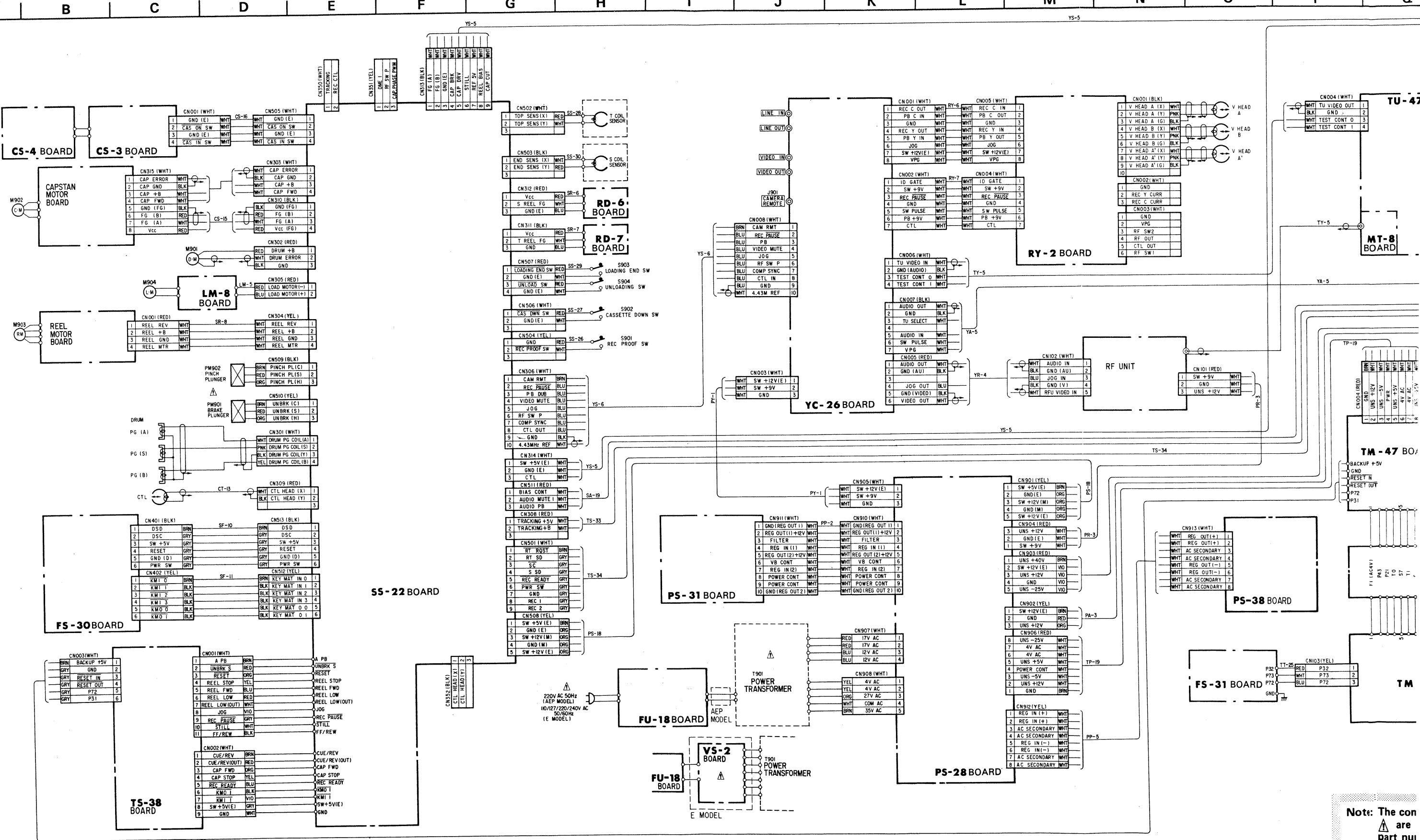
3-27. POWER SUPPLY BLOCK DIAGRAM

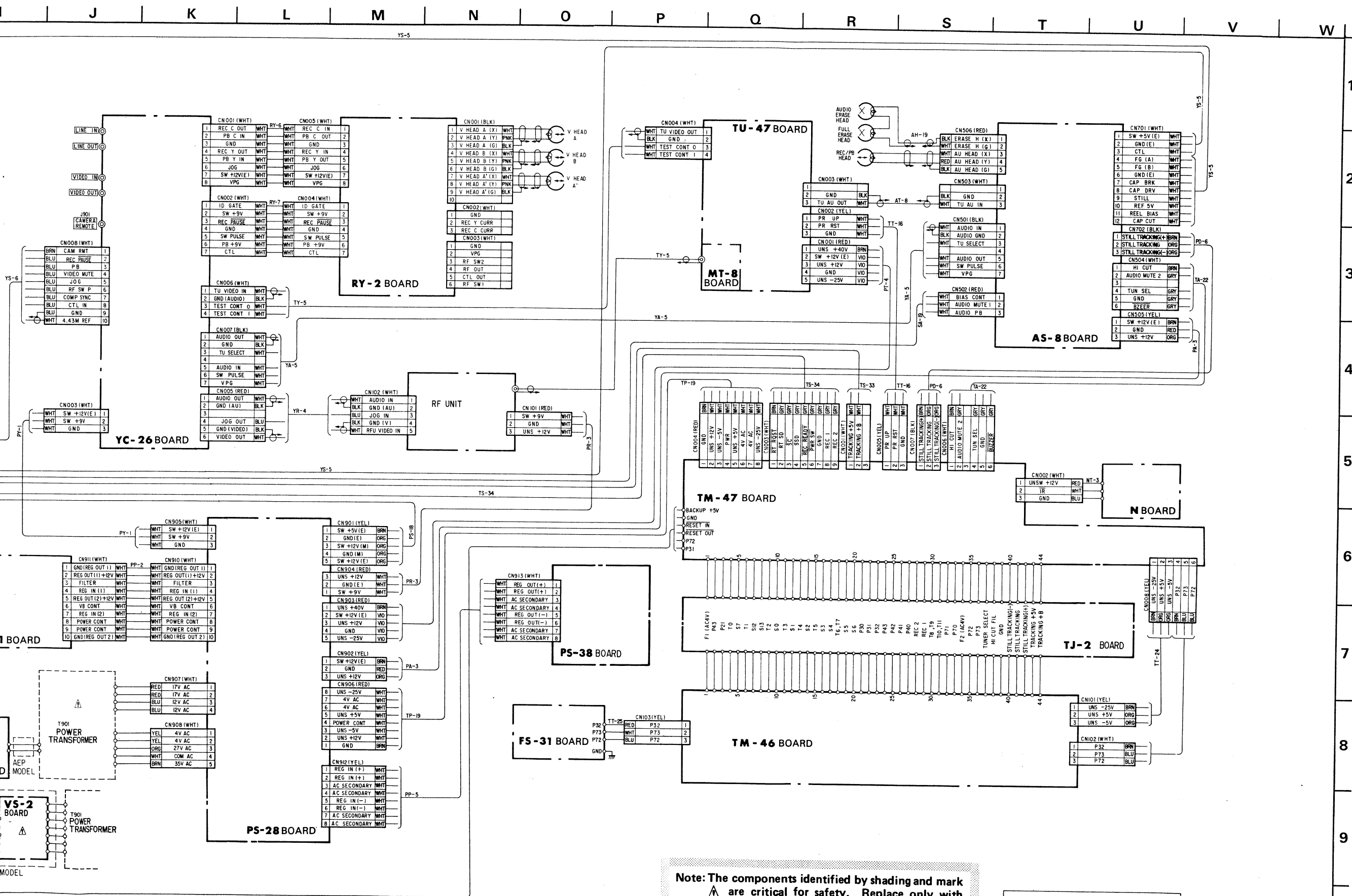


SECTION 4

SCHEMATIC DIAGRAM AND PRINTED WIRING BOARDS

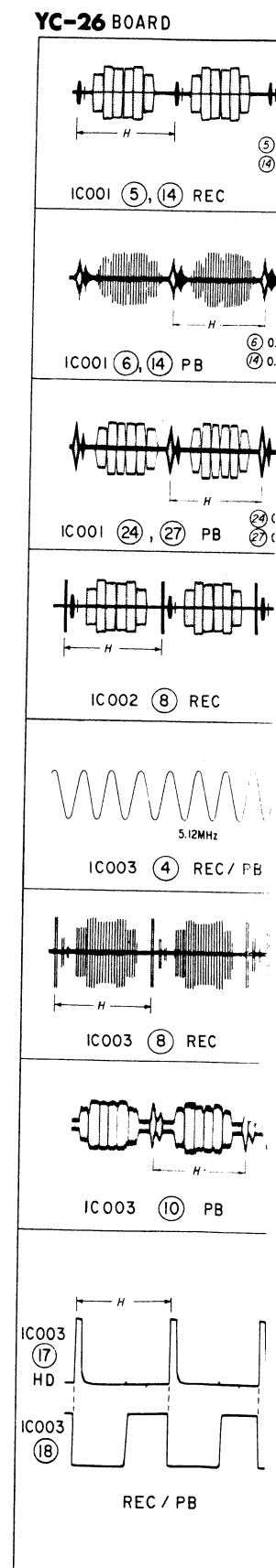
FRAME SCHEMATIC DIAGRAM

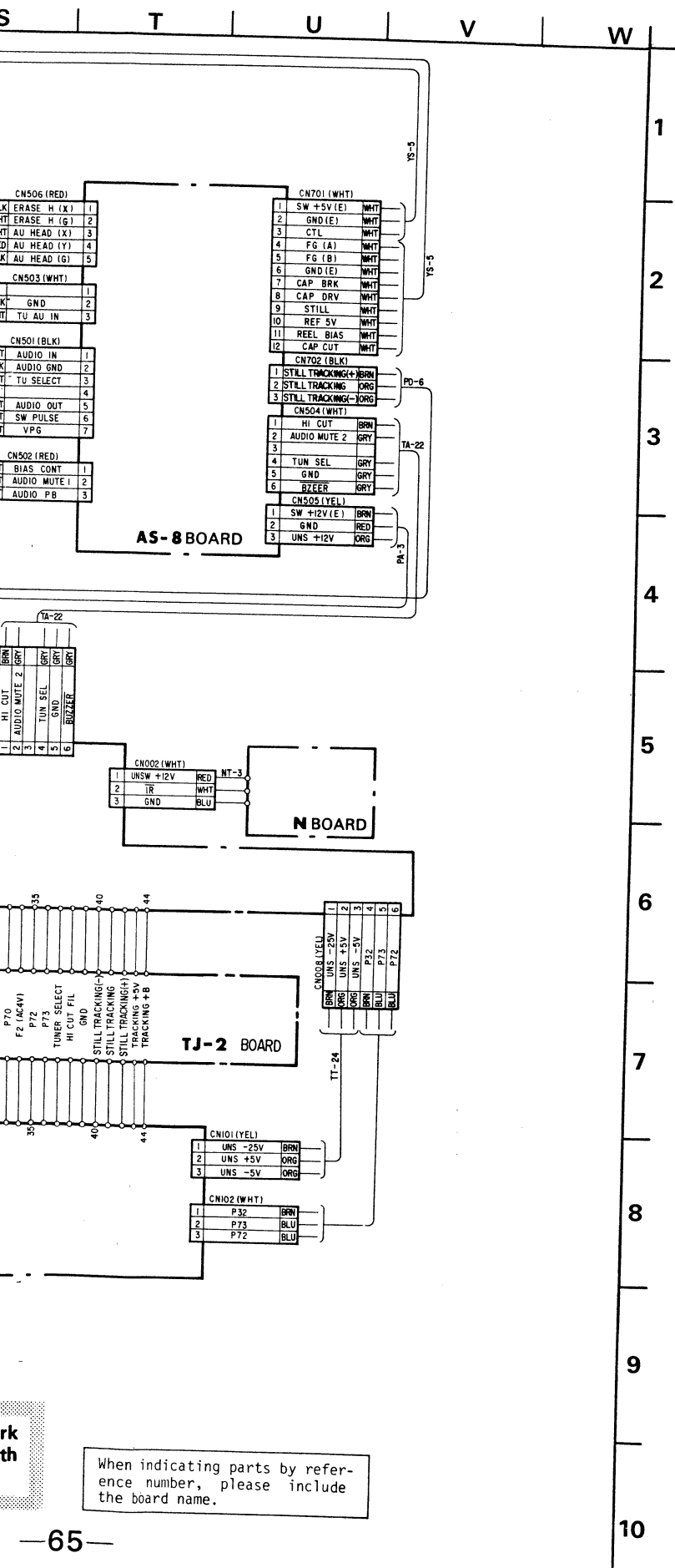




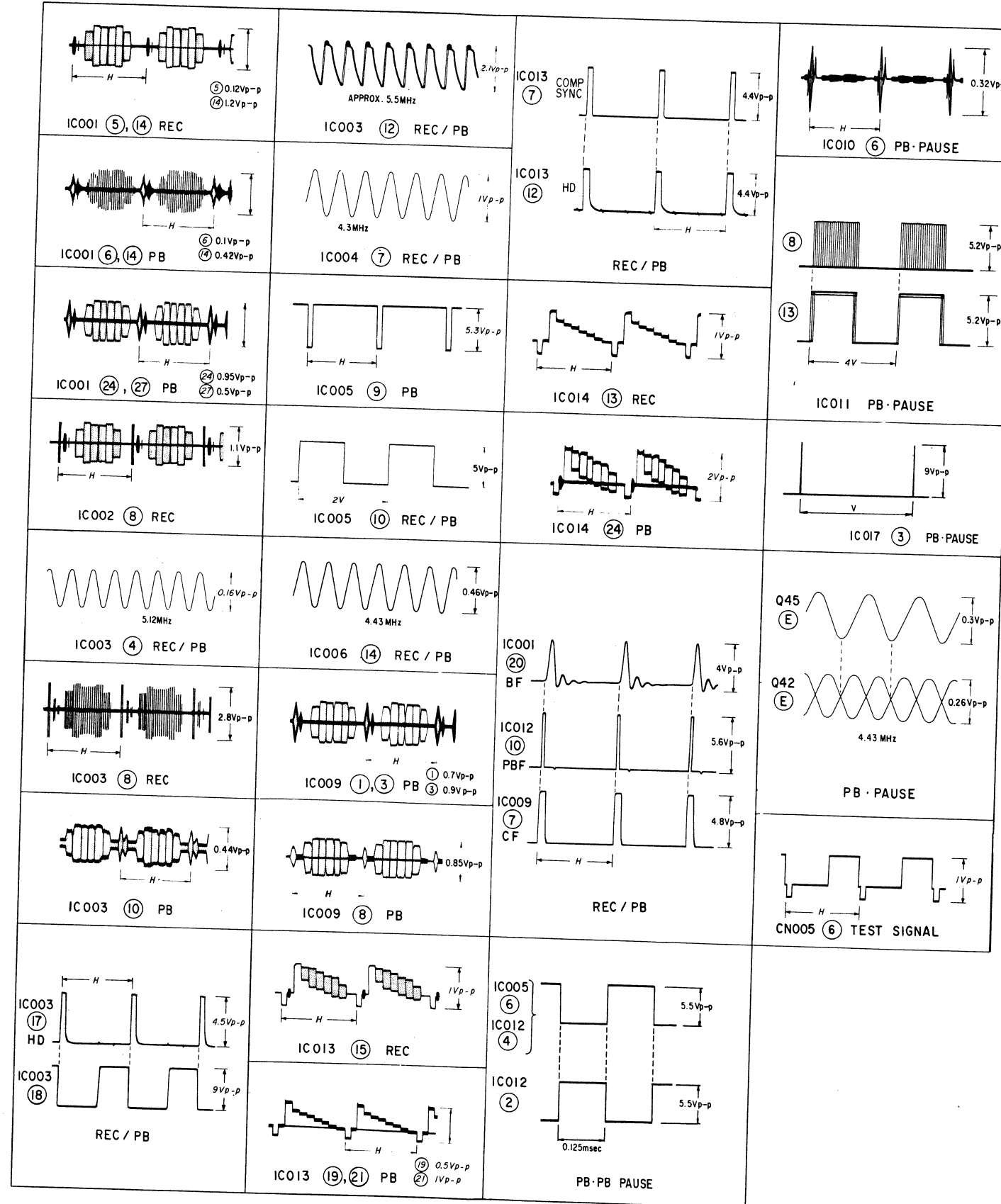
Note: The components identified by shading and mark  are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

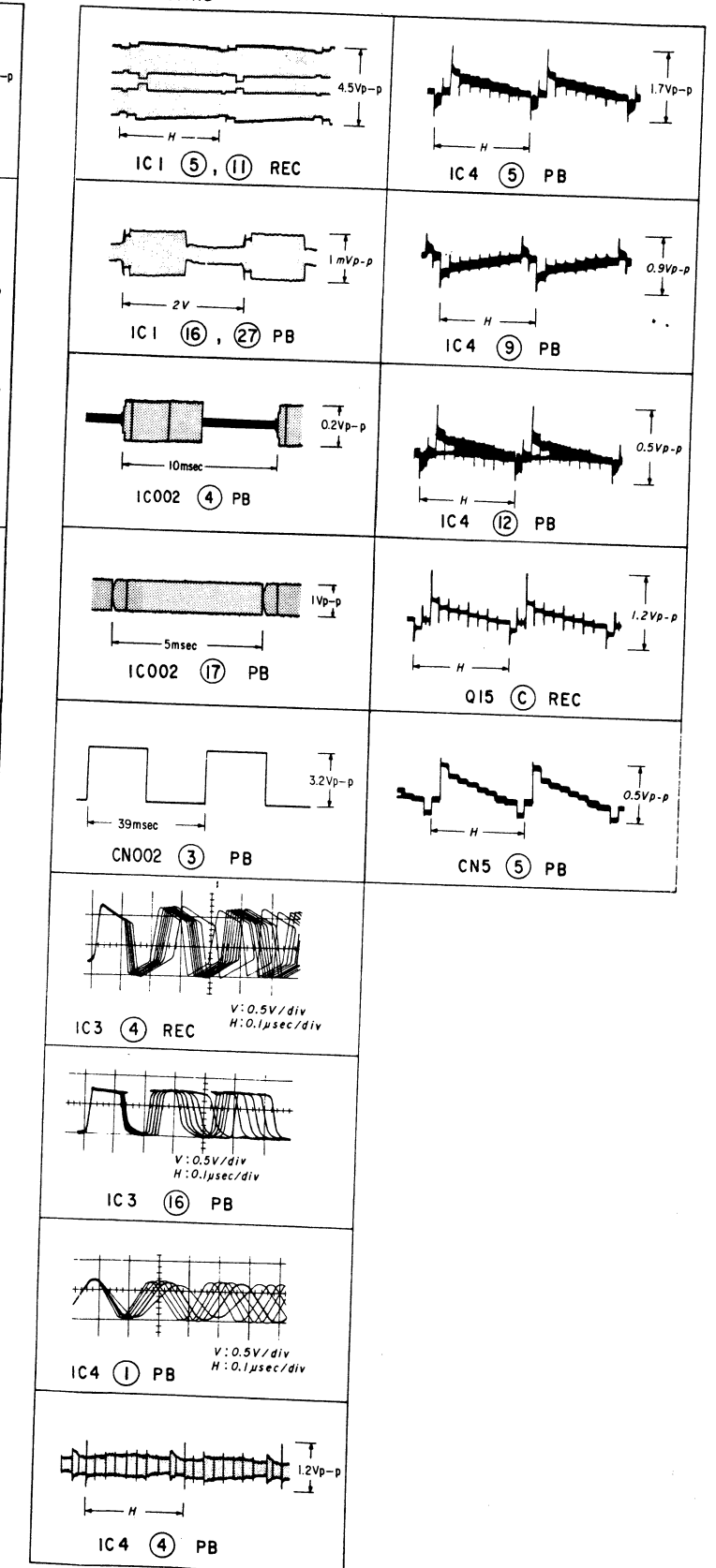




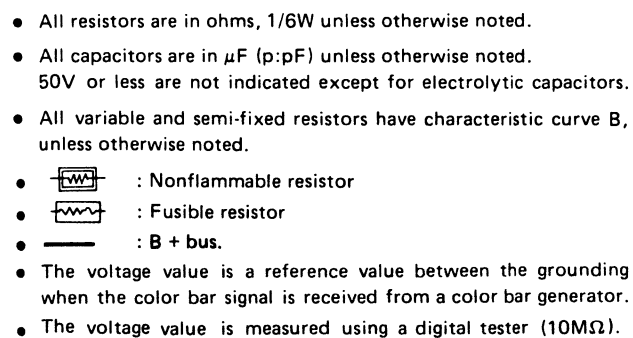
YC-26 BOARD



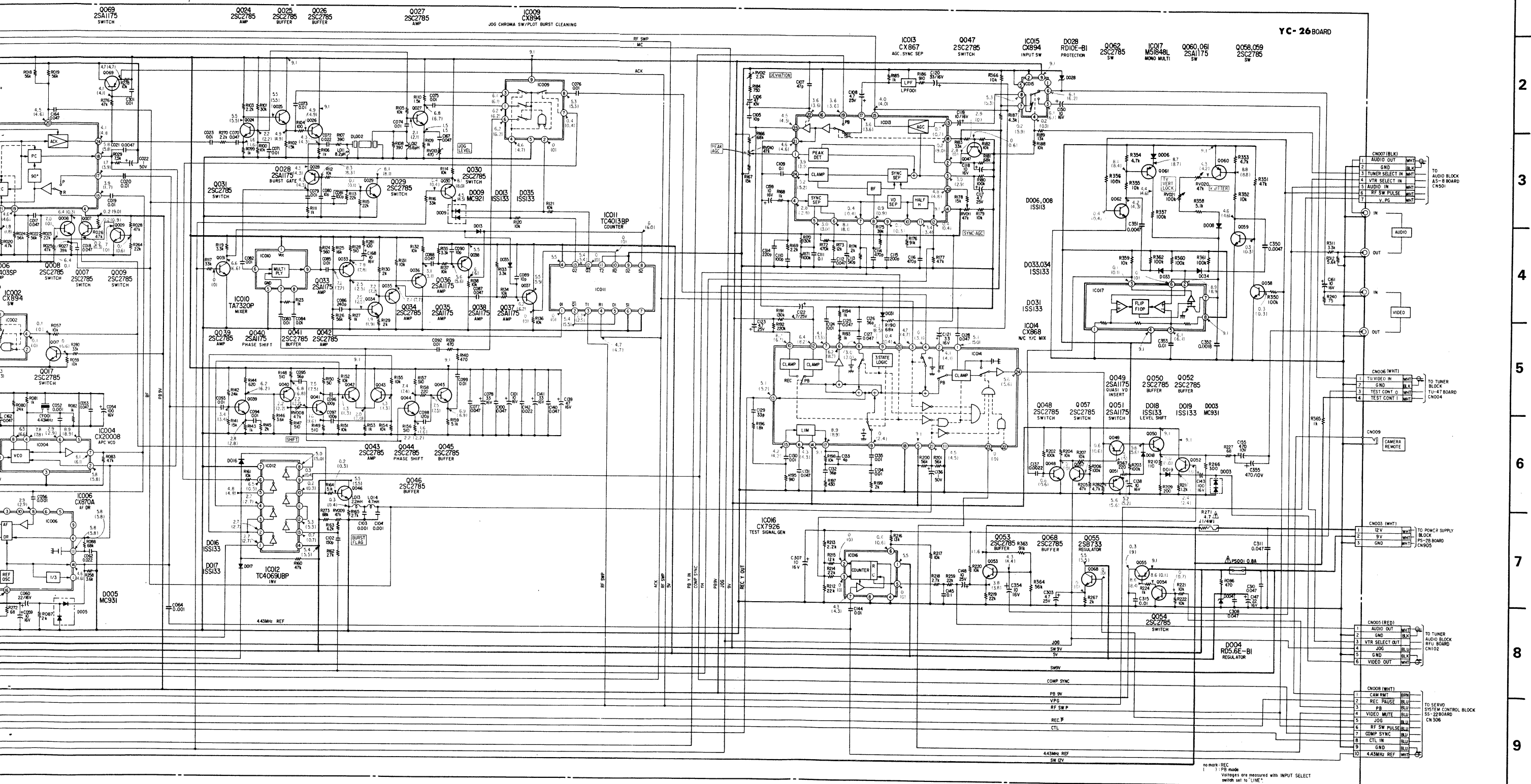
RY-2 BOARD



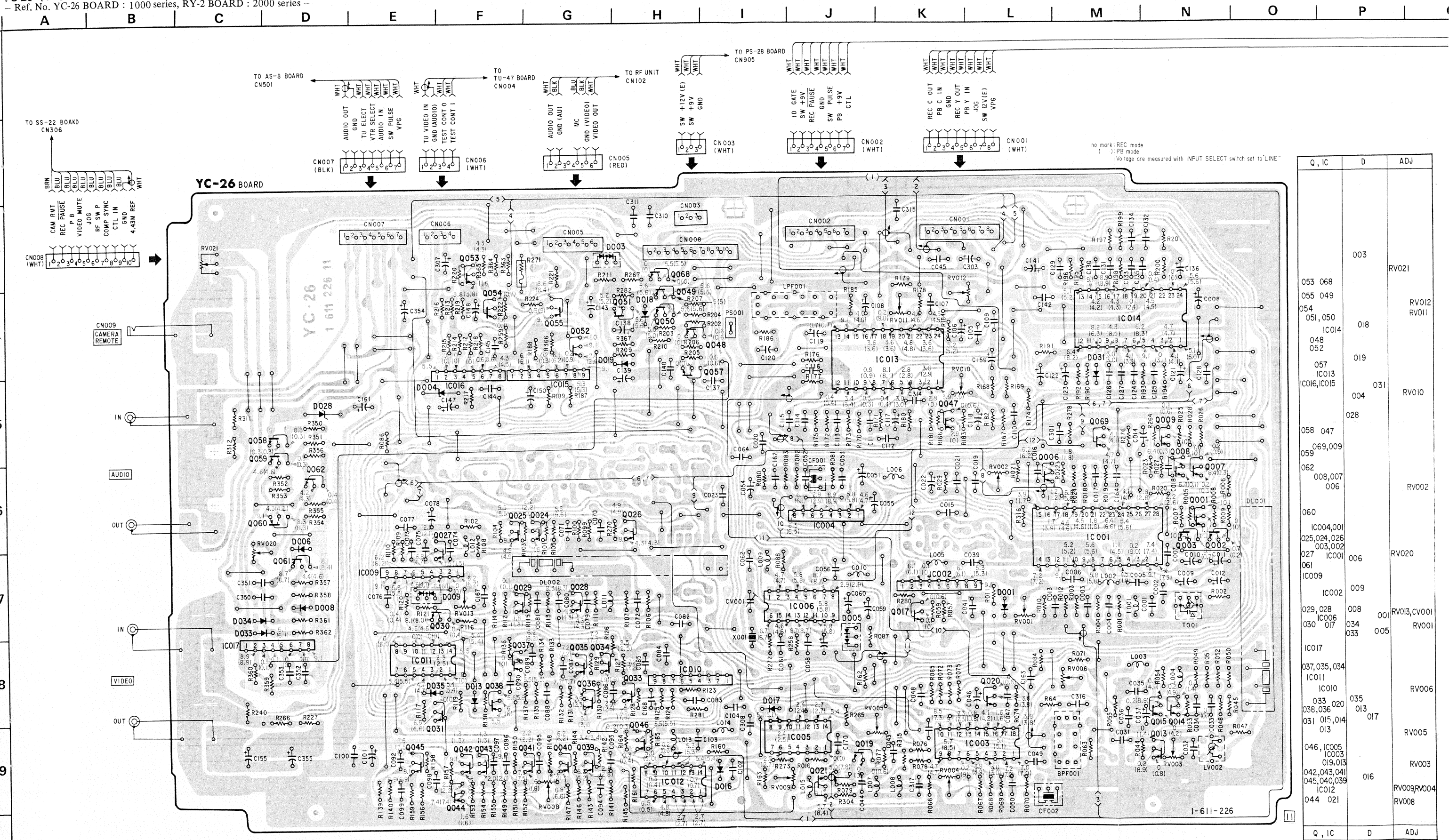
— Ref. No. YC-26 BOARD : 1000 series, RY-2 BOARD : 2000 series —



Note: The components identified by shading and mark  are critical for safety. Replace only with part number specified.

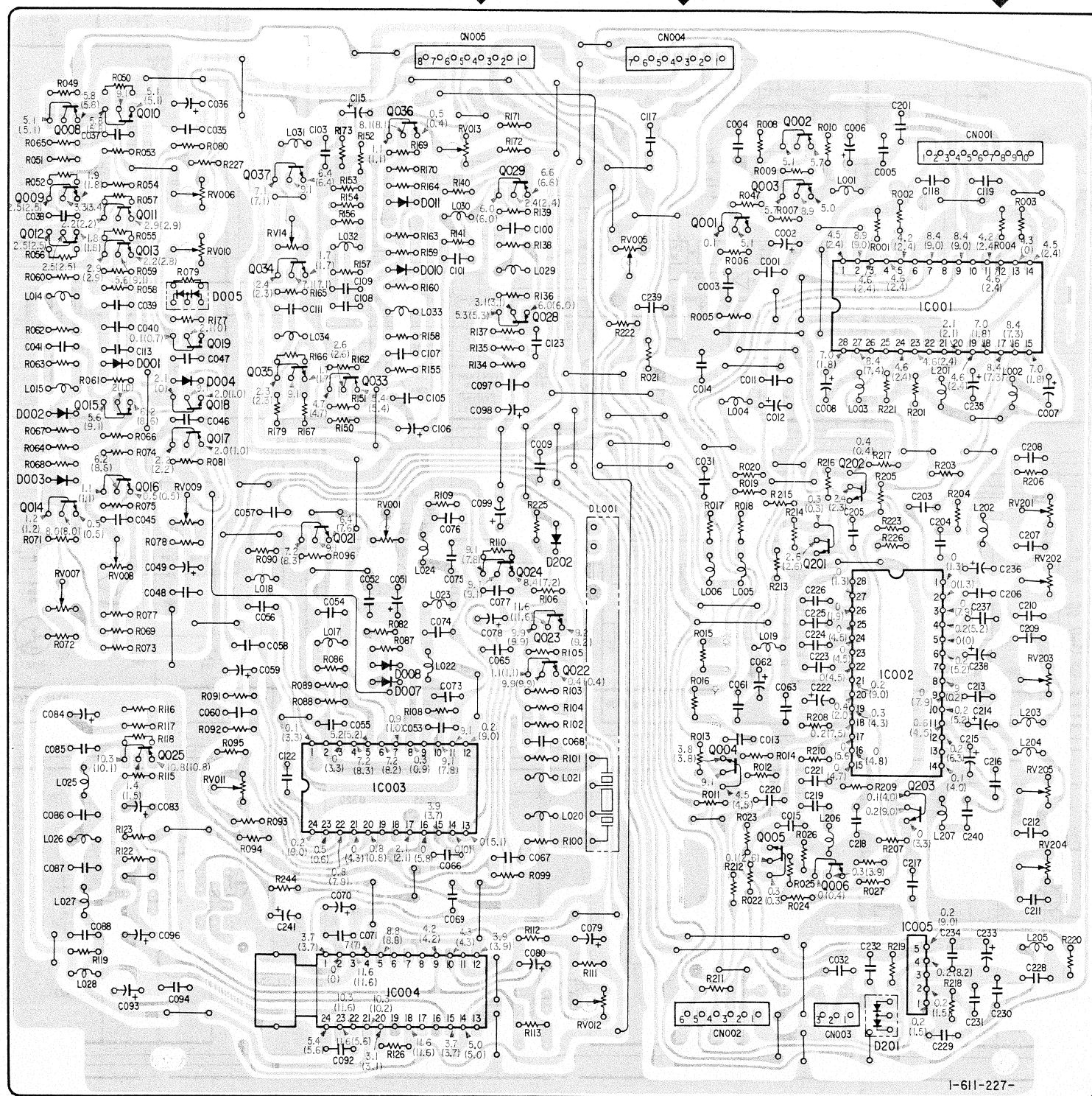


YC-26 (Y & CHROMA SIGNALS RECORD/PLAYBACK PROCESS), RY-2 (LOW CONVERTED CHROMA & Y-FM SIGNALS, RECORD/PLAYBACK AMP) PRINTED WIRING BOARDS
 - Ref. No. YC-26 BOARD : 1000 series, RY-2 BOARD : 2000 series -



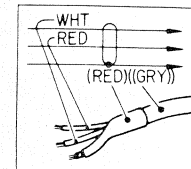
Q, IC	D	ADJ
053 068	003	RV021
055 049		RV012
054		RV011
051, 050	018	
048		
052		
057	019	
IC013		
IC016, IC015	031	RV010
	004	
058 047	028	
059		
062		
008, 007		RV002
006		
060		
IC004, 001		
025, 024, 026		
003, 002		
027 IC001	006	RV020
061		
IC009		
IC002	009	
029, 028	008	RV013, CV001
030 017	034	RV001
	033	
005		
IC017		
037, 035, 034		
IC011		
IC010		RV006
033 020	035	
038, 036	013	
031 015, 014	017	
013		RV005
046, IC005		
IC003		
019, 013		RV003
042, 043, 041		
045, 040, 039	016	RV009, RV004
IC012		
044 021		RV008

O P Q R S T U V W X Y Z A1 B1 C1 D1

RY-2 BOARD no mark: REC mode
(): PB mode

Q, IC	D	ADJ, TP
008 010 036 002		RV013
037 029,003		RV006
009 011 001		RV014
012 013		RV010, RV005
034 010		
IC001 028 005		
019 035 001 004		
015 018 002		
017		
016 202 003		
014 201 202		RV009, RV201
021 201		RV001
024		RV008
023		RV202
022 008 007		RV203
IC002		
025 004		RV011, RV205
IC003 203		
005 006		RV204
IC005		
IC004 201		RV012

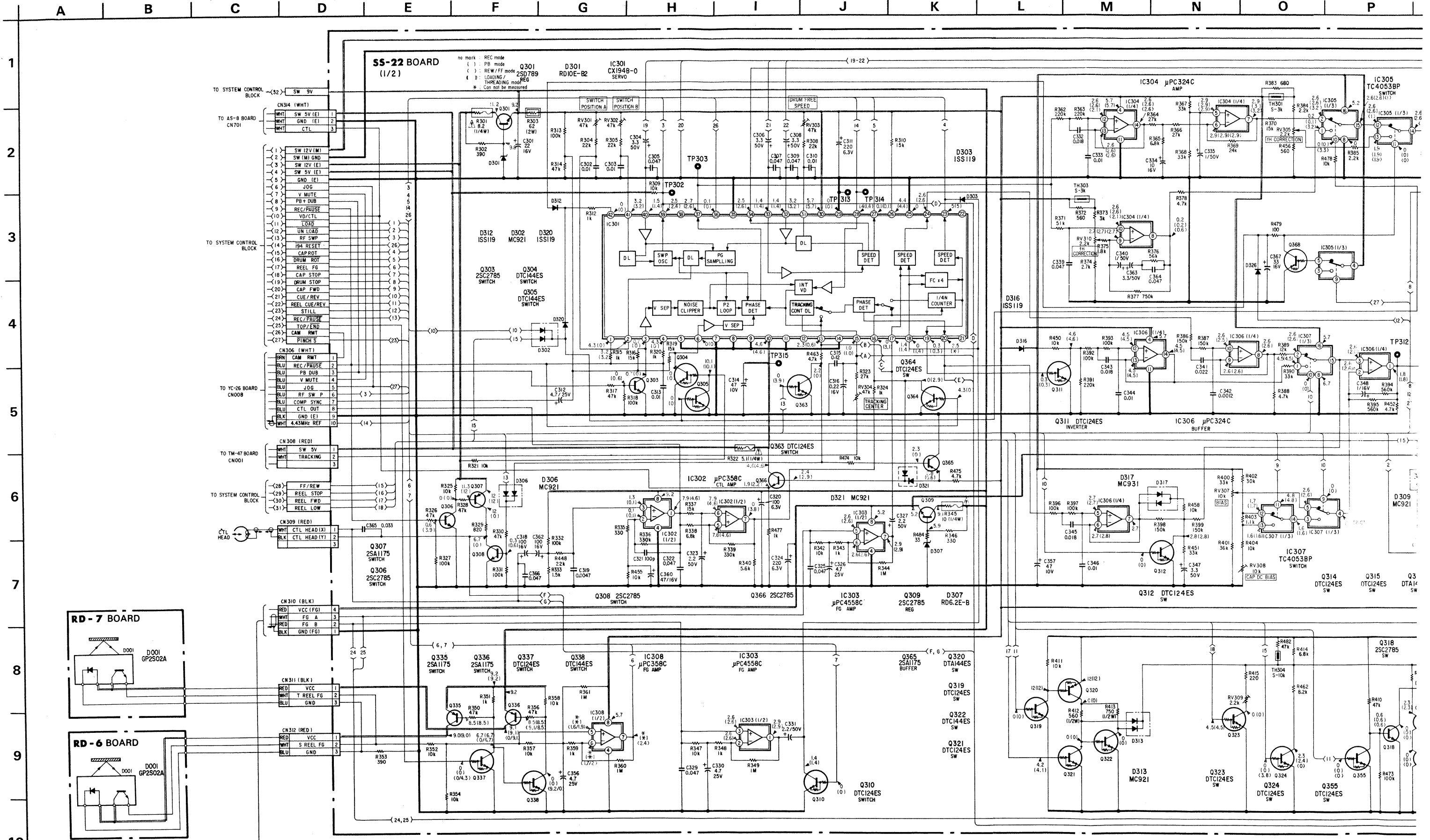
Color code of sleeving over the end of the jacket.



SERVO SERVO

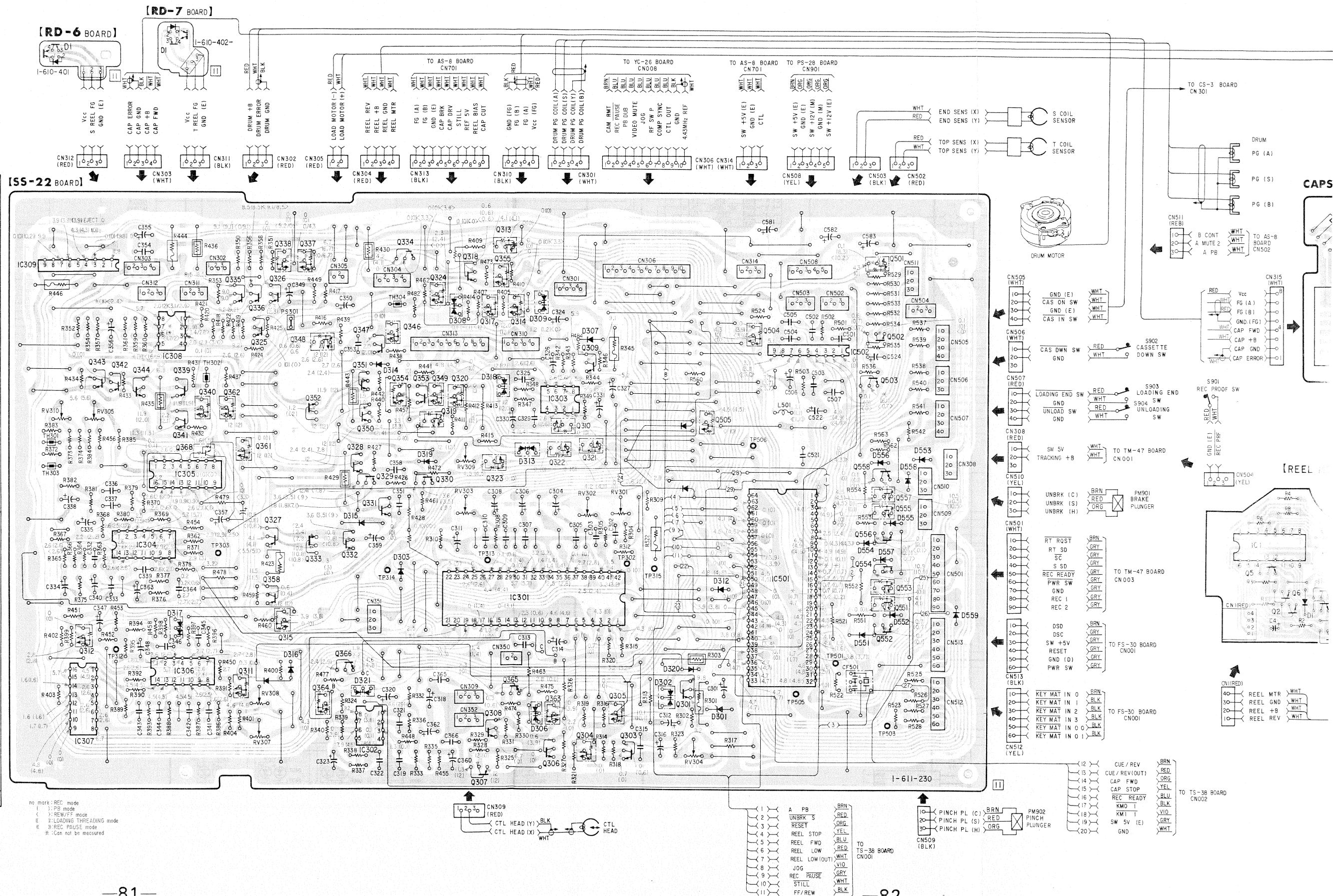
4-3. SS-22 (SERVO), RD-6 (ROTATION DETECTOR), RD-7 (ROTATION DETECTOR), LM-8 (NOISE FILTER), CAPSTAN MOTOR, REEL MOTOR SCHEMATIC DIAGRAM

— Ref. No. SS-22 BOARD : 4000 series, RD-6 BOARD : 2600 series, RD-7 BOARD : 2500 series, LM-8 BOARD : 3100 series —

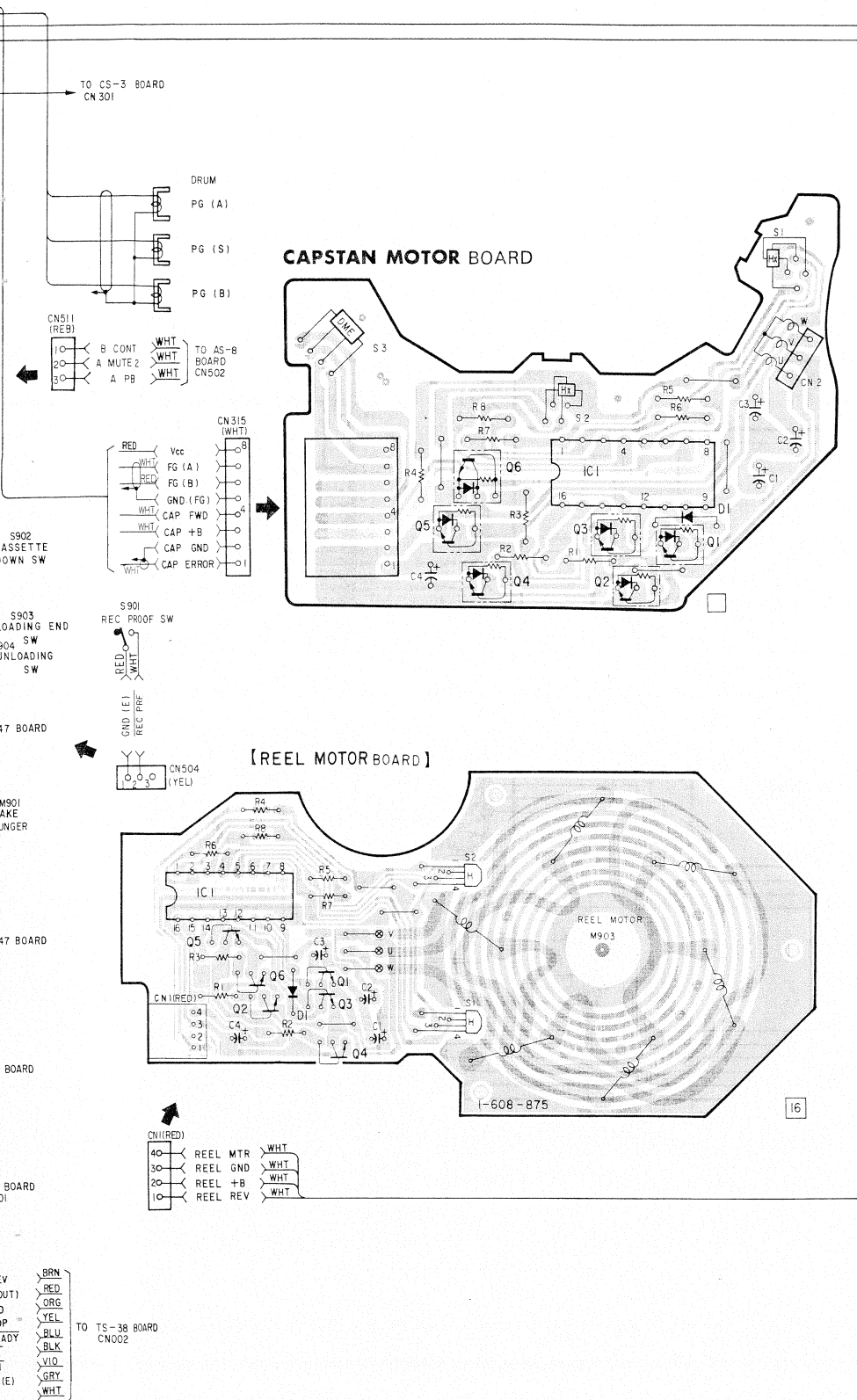


SS-22 (SERVO), RD-6 (ROTATION DETECTOR), RD-7 (ROTATION DETECTOR), LM-8 (NOISE FILTER), CAPSTAN MOTOR, REEL MOTOR PRINTED WIRING BOARDS
– Ref. No. SS-22 BOARD : 4000 series, RD-6 BOARD : 2600 series, RD-7 BOARD : 2500 series, LM-8 BOARD : 3100 series –

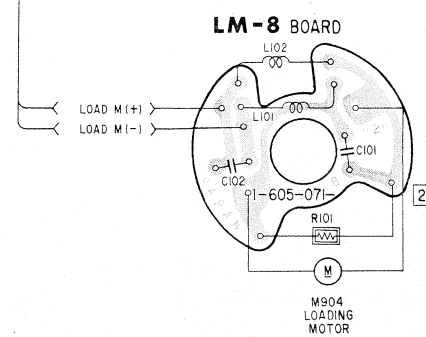
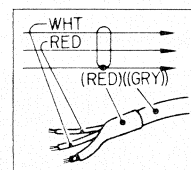
Q , IC	D	ADJ , TP
313		
338, 337, 334		
IC309 501		
318 355		
335, 336, 326		
324	309	
317 314	308	
325, 346, 504		
IC308 502		
348 347	307	
IC502		
	314	
343, 503		
342		
344, 339, 351	318	
354, 353, 349, 320		
340, 362, IC303		
341, 350, 319		RV310, RV305
505 352		
310		
361, 322, 321		
368	313	506
328, 323	319, 556, 553	
IC305 558	558	
329, 330, 557		
331 555		
		RV303, RV302
333 556	315 555	RV301
327		
IC304 332	554	
	557	303
		313, 302
	553	
	303	314 315
358 551		
IC301 IC501	312	
	552, 559	
315		
312 552	317 551	
		312
366	316 320	501
IC306		
311		
365, 301	321	505
IC307 364	302	RV308
	306 301	
363, 305		
IC302, 308		RV307 503
306, 304, 303		
307		
Q IC	D	ADJ , TP



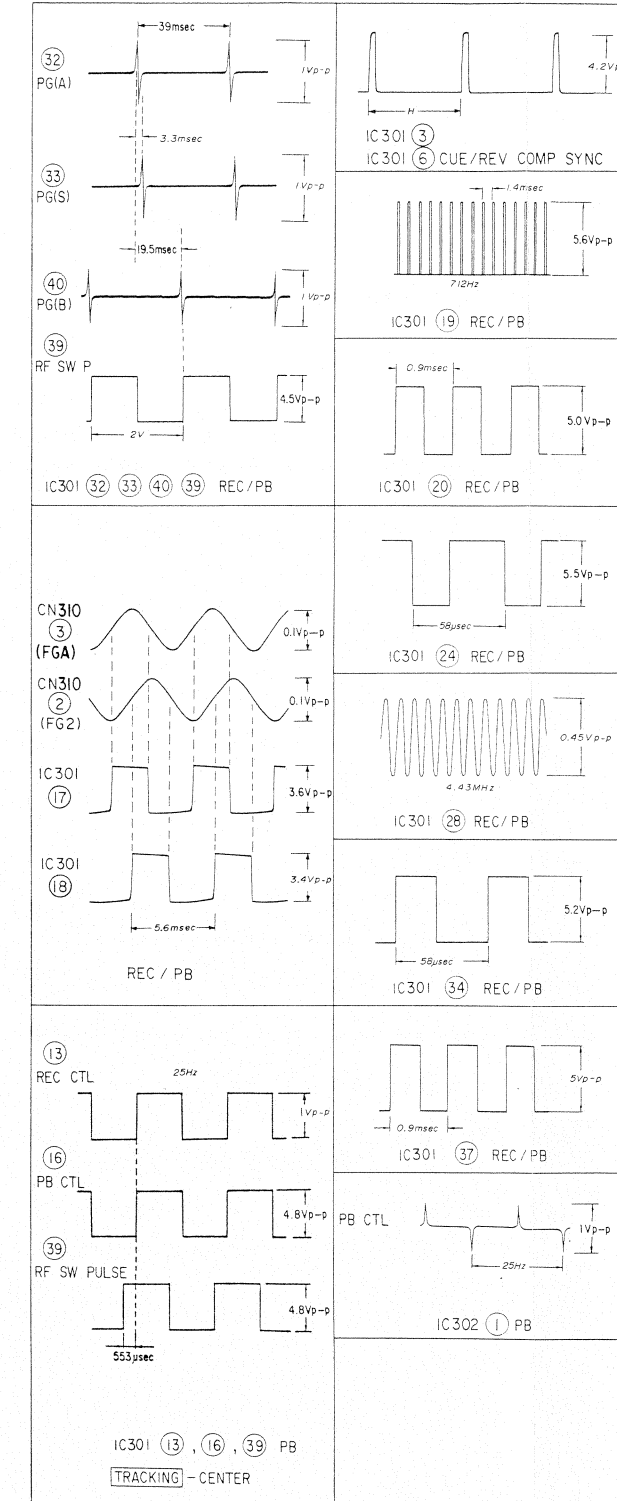
O P Q R S T U V W X Y Z A1 B1 C1 D1



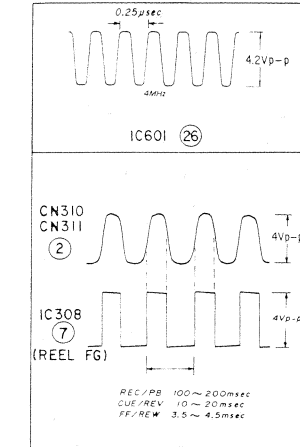
- Color code of sleeving over the end of the jacket.



SS-22 BOARD (SERVO)



SS-22 BOARD (SYSTEM CONTROL)



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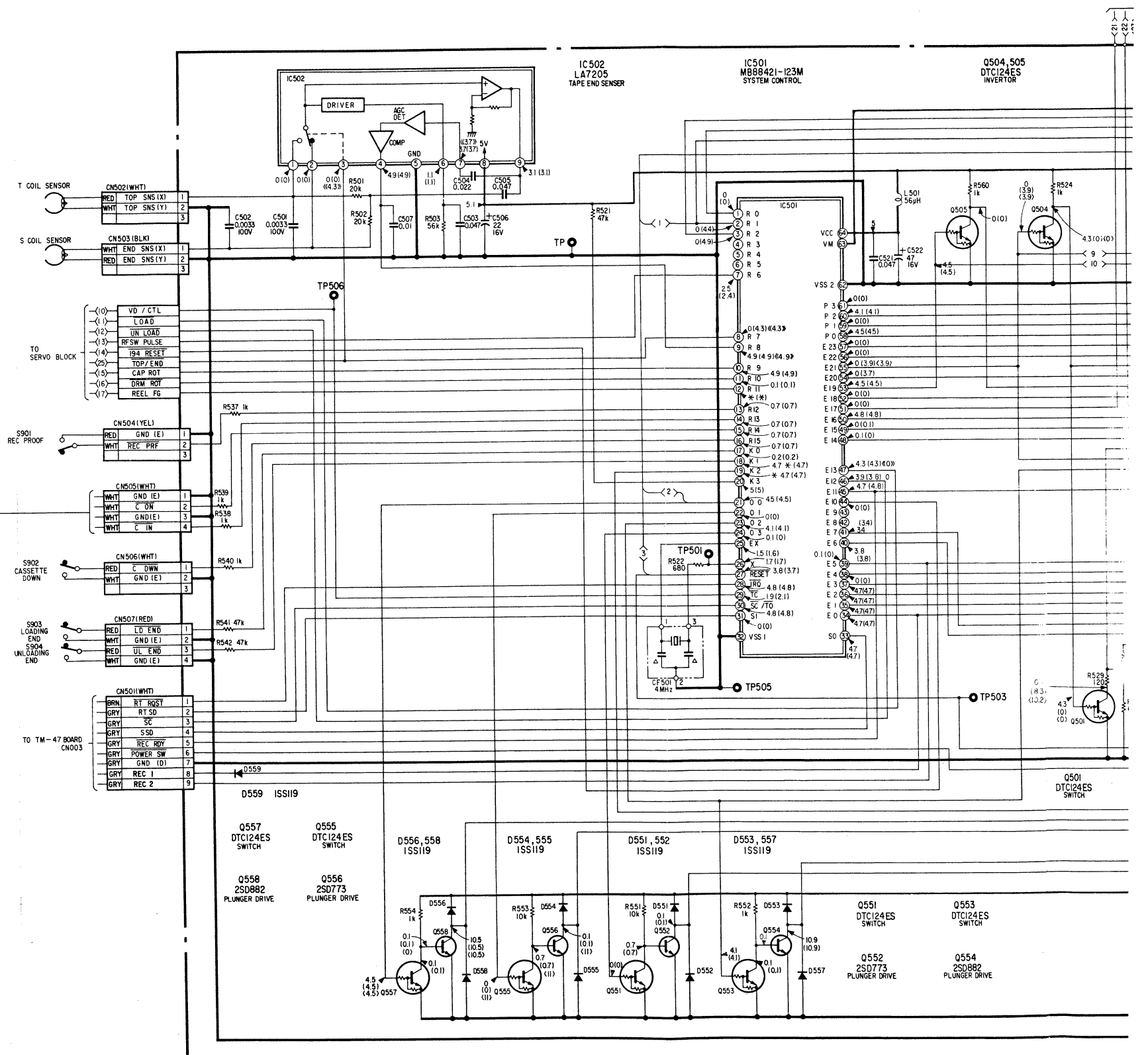
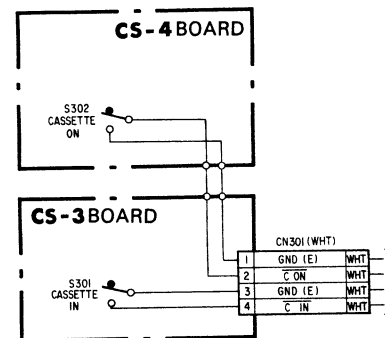
SYSTEM CONTROL SYSTEM CONTROL

4.4. SS-22 (SYSTEM CONTROL), FS-30 (TAPE RUN CONTROL AND INDICATOR, FUNCTION SWITCH), TS-38 (SUB SYSTEM CONTROL), CS-3 (CASSETTE ON SWITCH), CS-4 (CASSETTE IN SWITCH) SCHEMATIC DIAGRAM
 - Ref. No. SS-22 BOARD : 4000 series, FS-30 BOARD : 1400 series, TS-38 BOARD: 2900 series, CS-3, CS-4 BOARD : 1300 series -

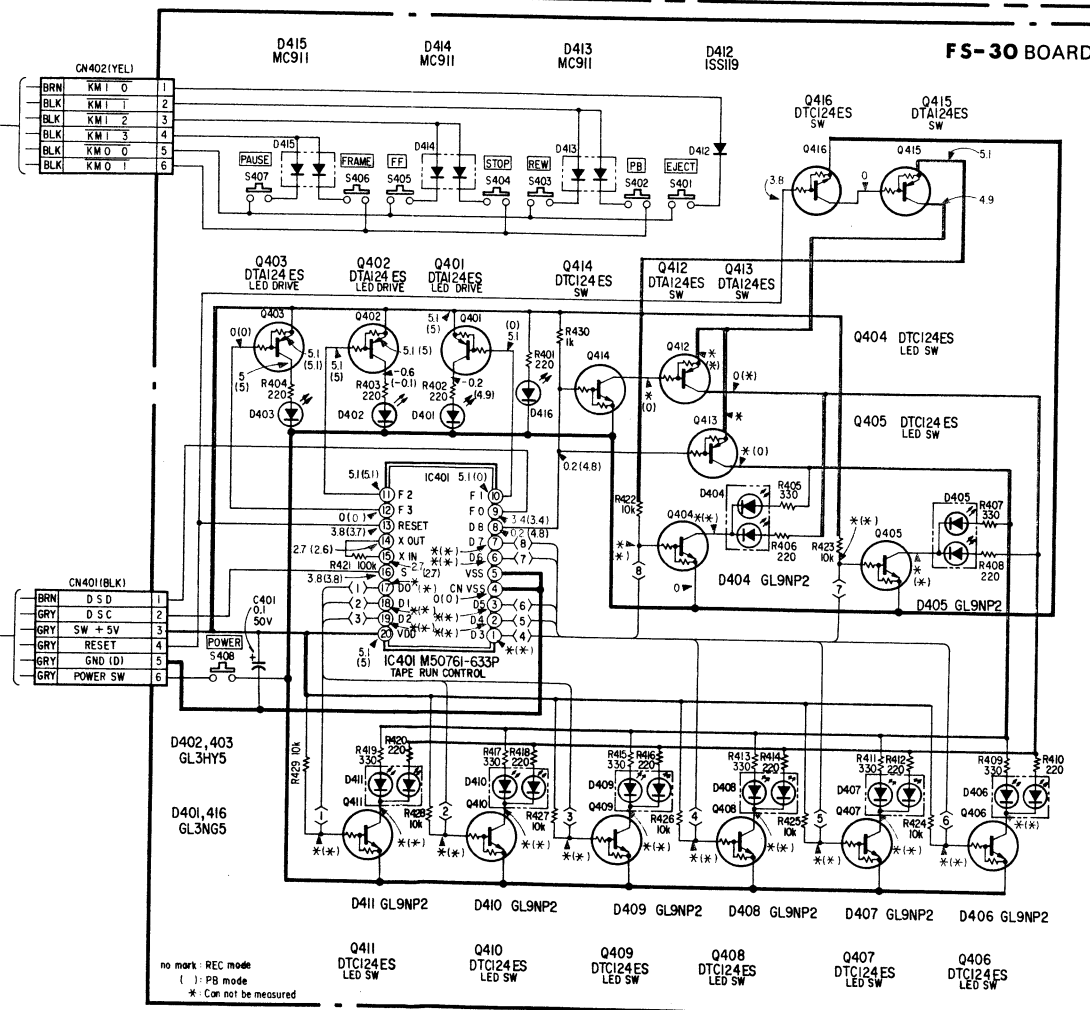
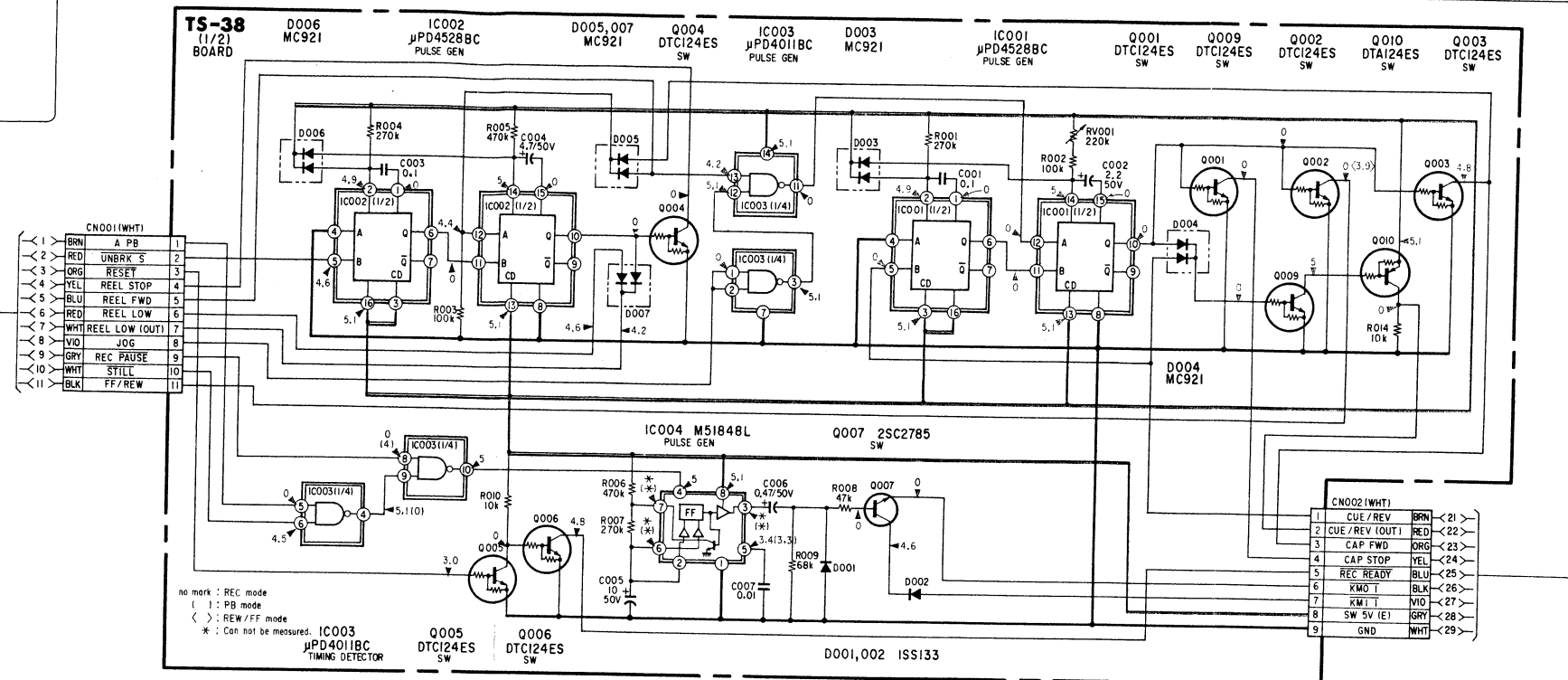
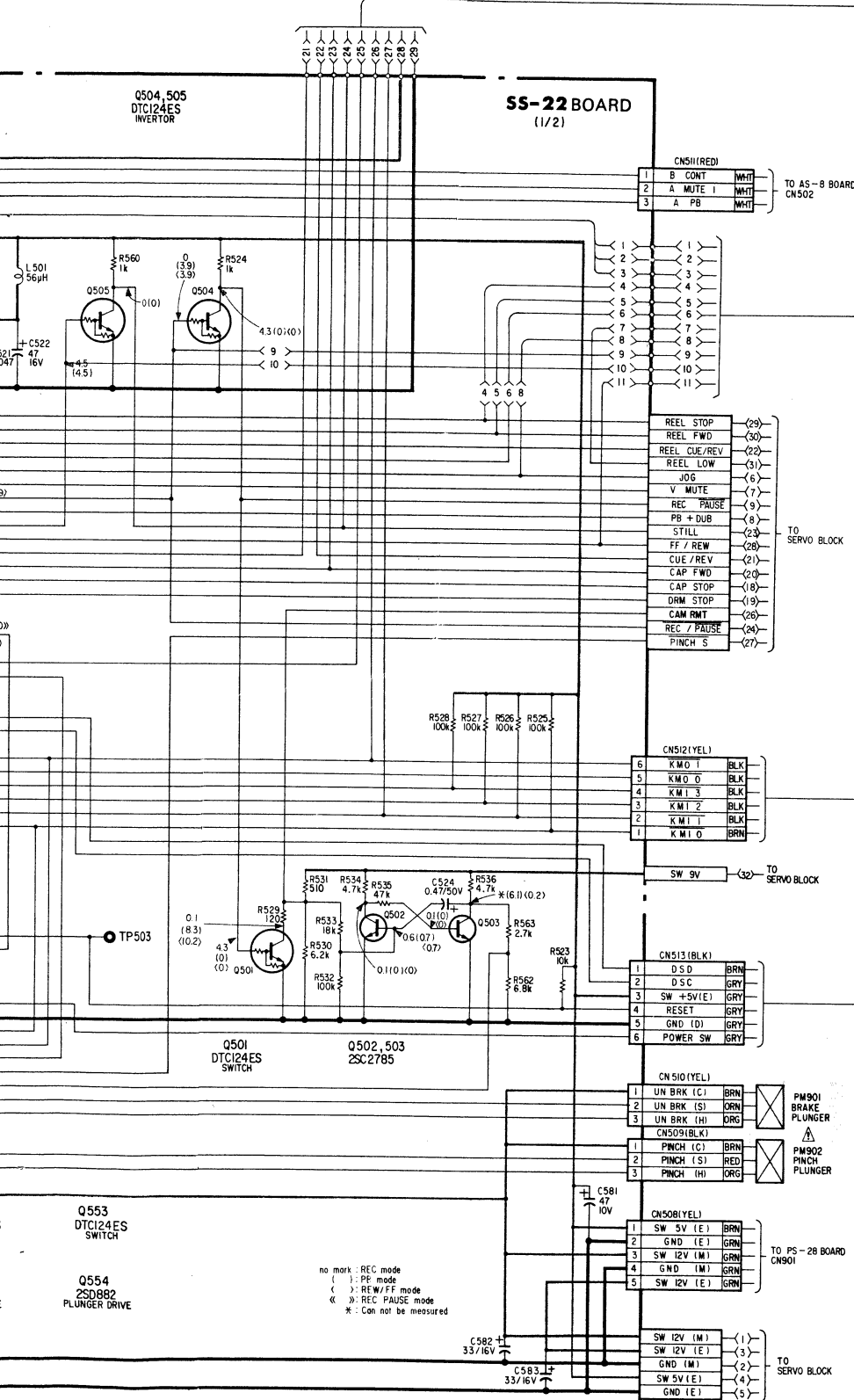
- All resistors are in ohms, 1/6W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted. 50V or less are not indicated except for electrolytic capacitors.
- All variable and semi-fixed resistors have characteristic curve B, unless otherwise noted.
-  : Nonflammable resistor
-  : Fusible resistor
-  : B + bus.
- The voltage value is a reference value between the grounding when the color bar signal is received from a color bar generator.
- The voltage value is measured using a digital tester (10M Ω).

Note: The components identified by shading and mark  are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

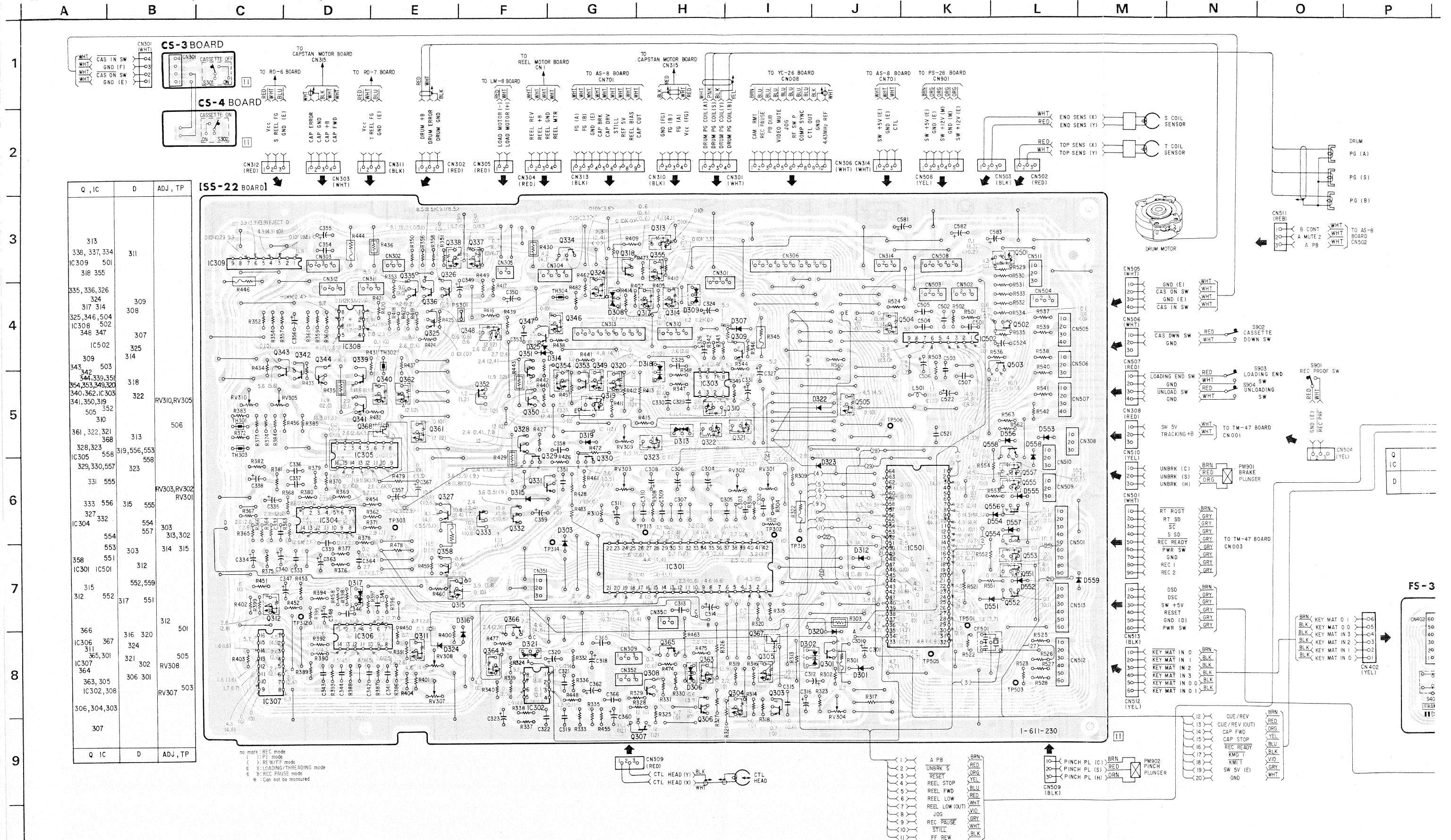


SYSTEM CONTROL

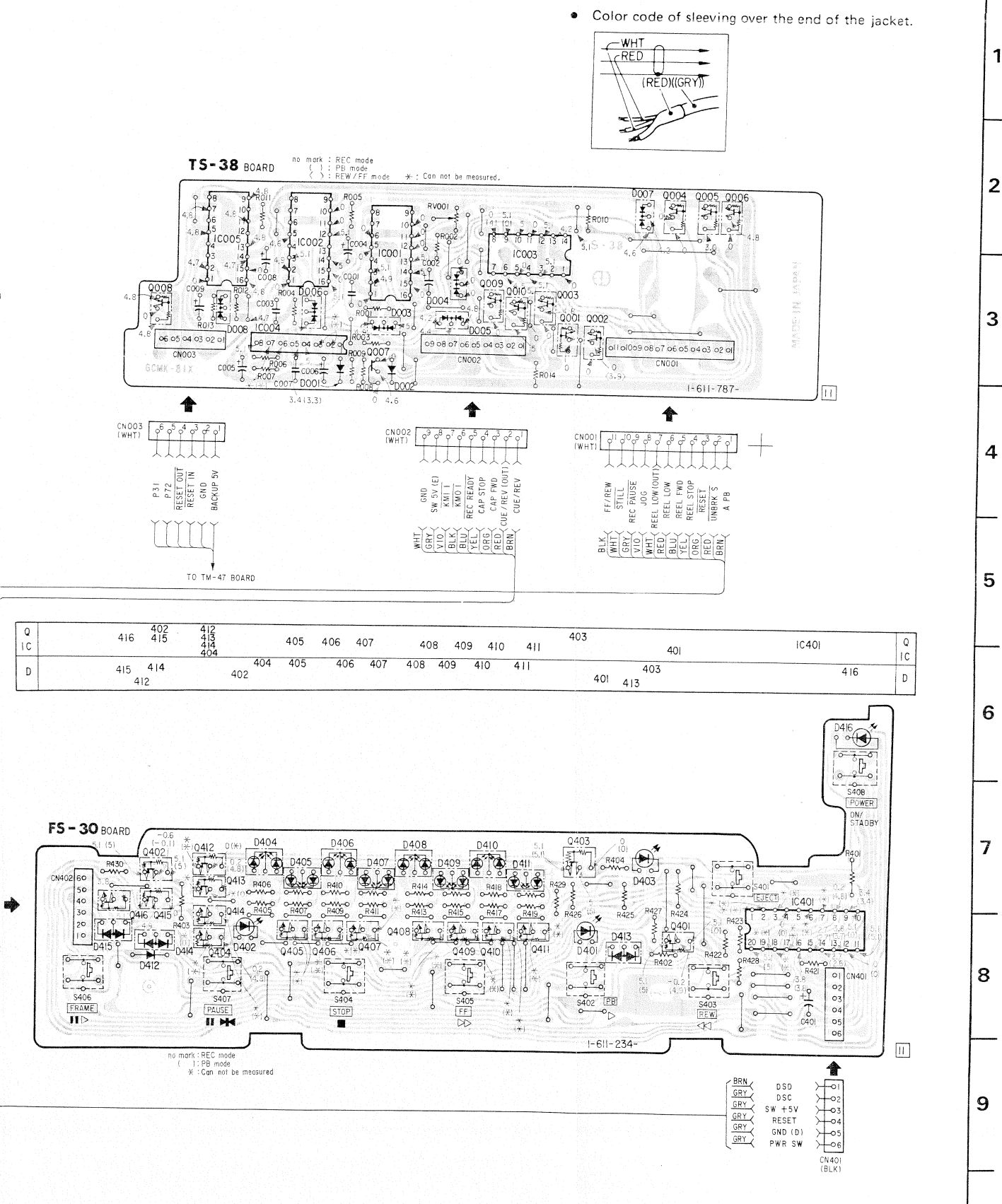


SYSTEM CONTROL SYSTEM CONTROL

SS-22 (SYSTEM CONTROL), FS-30 (TAPE RUN CONTROL AND INDICATOR, FUNCTION SWITCH), TS-38 (SUB SYSTEM CONTROL), CS-3 (CASSETTE ON SWITCH), CS-4 (CASSETTE IN SWITCH) PRINTED WIRING BOARDS
 - Ref. No. SS-22 BOARD : 4000 series, FS-30 BOARD : 1400 series, TS-38 BOARD : 2900 series, CS-3, CS-4 BOARD : 1300 series -

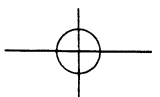
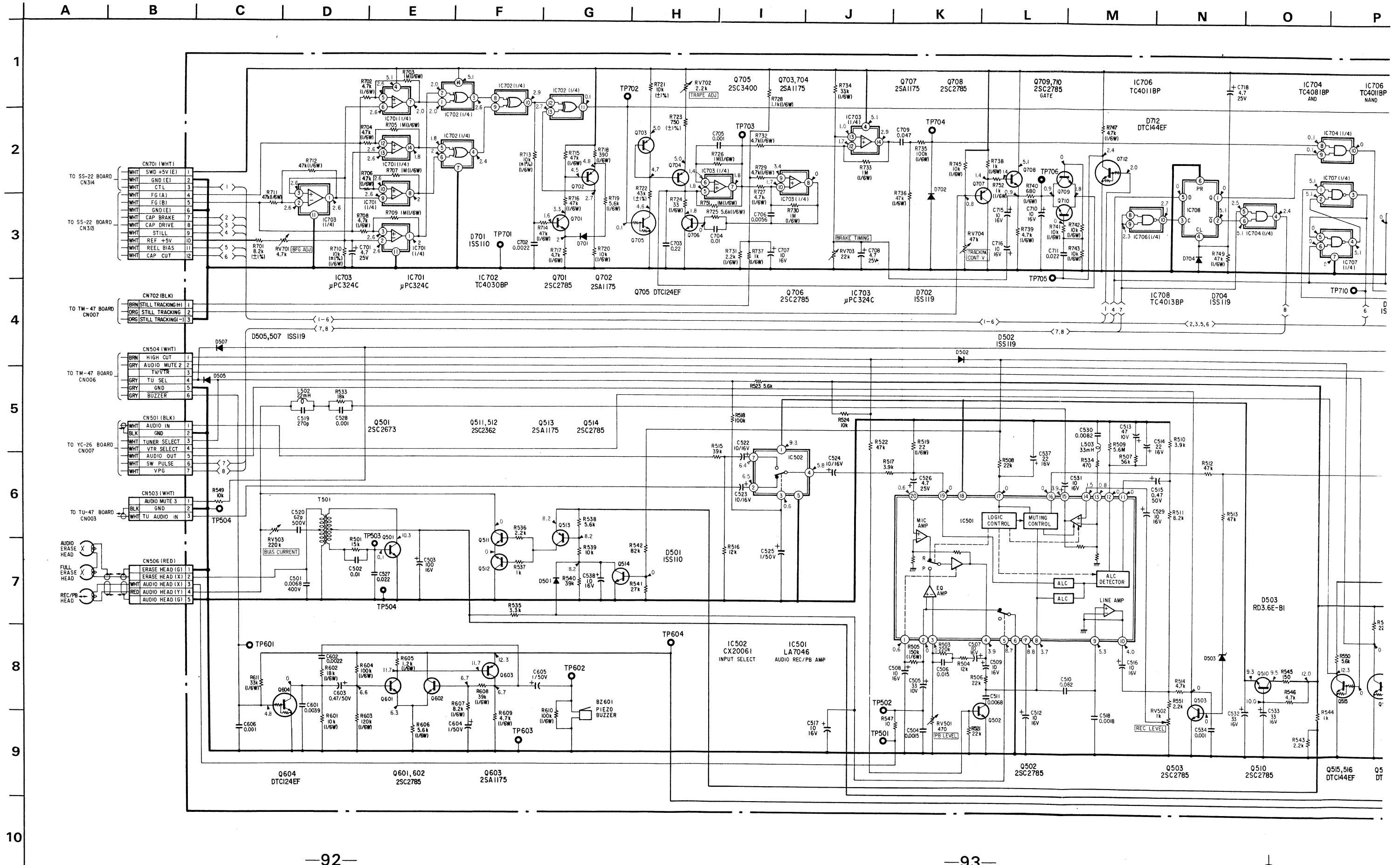


A horizontal timeline with 13 segments labeled H through W. Segment H is shaded light blue, and segment W is shaded light red. All other segments are white.



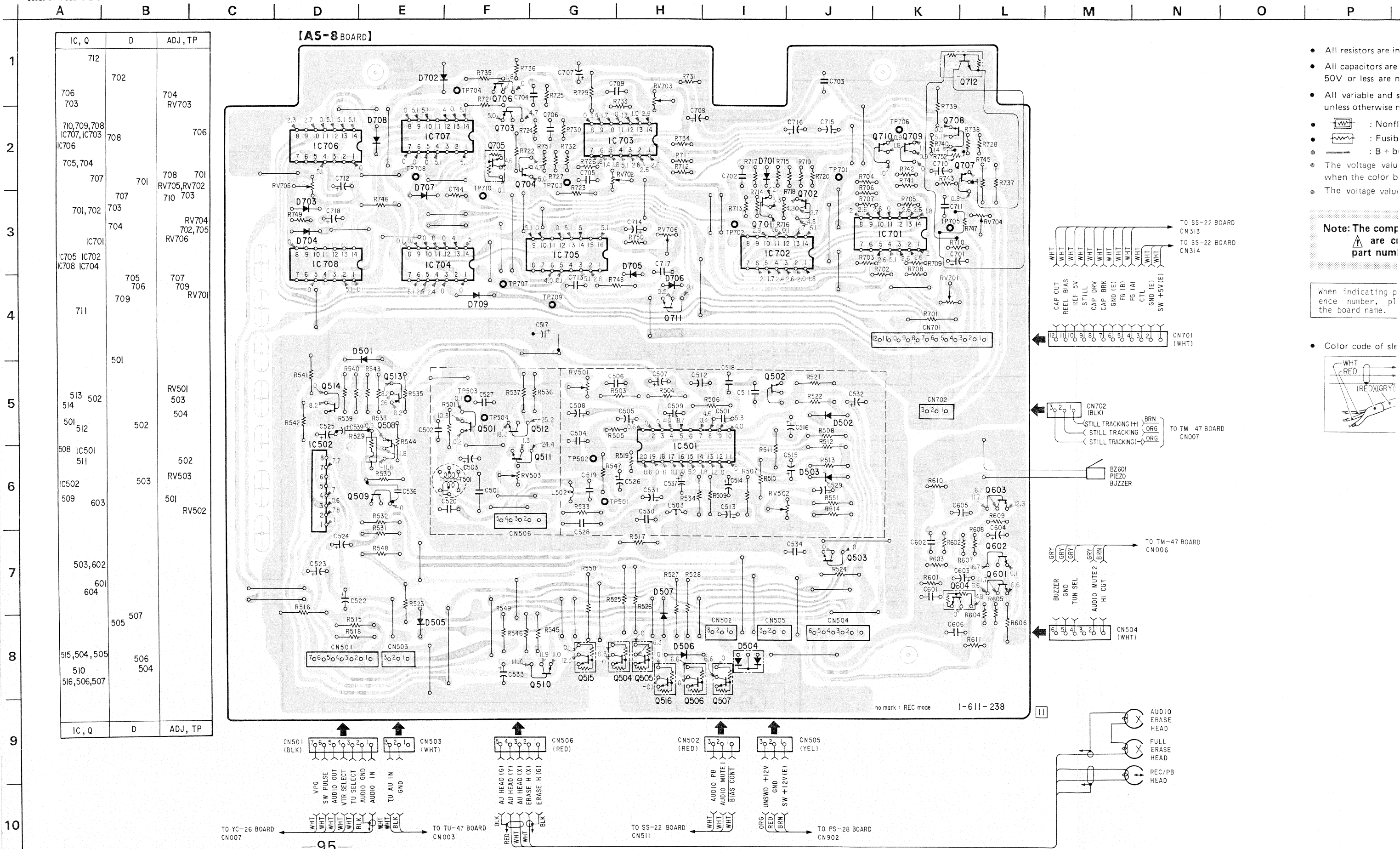
4-5. AS-8 (AUDIO RECORD/PLAYBACK PROCESS, VIDEO LA) SCHEMATIC DIAGRAM

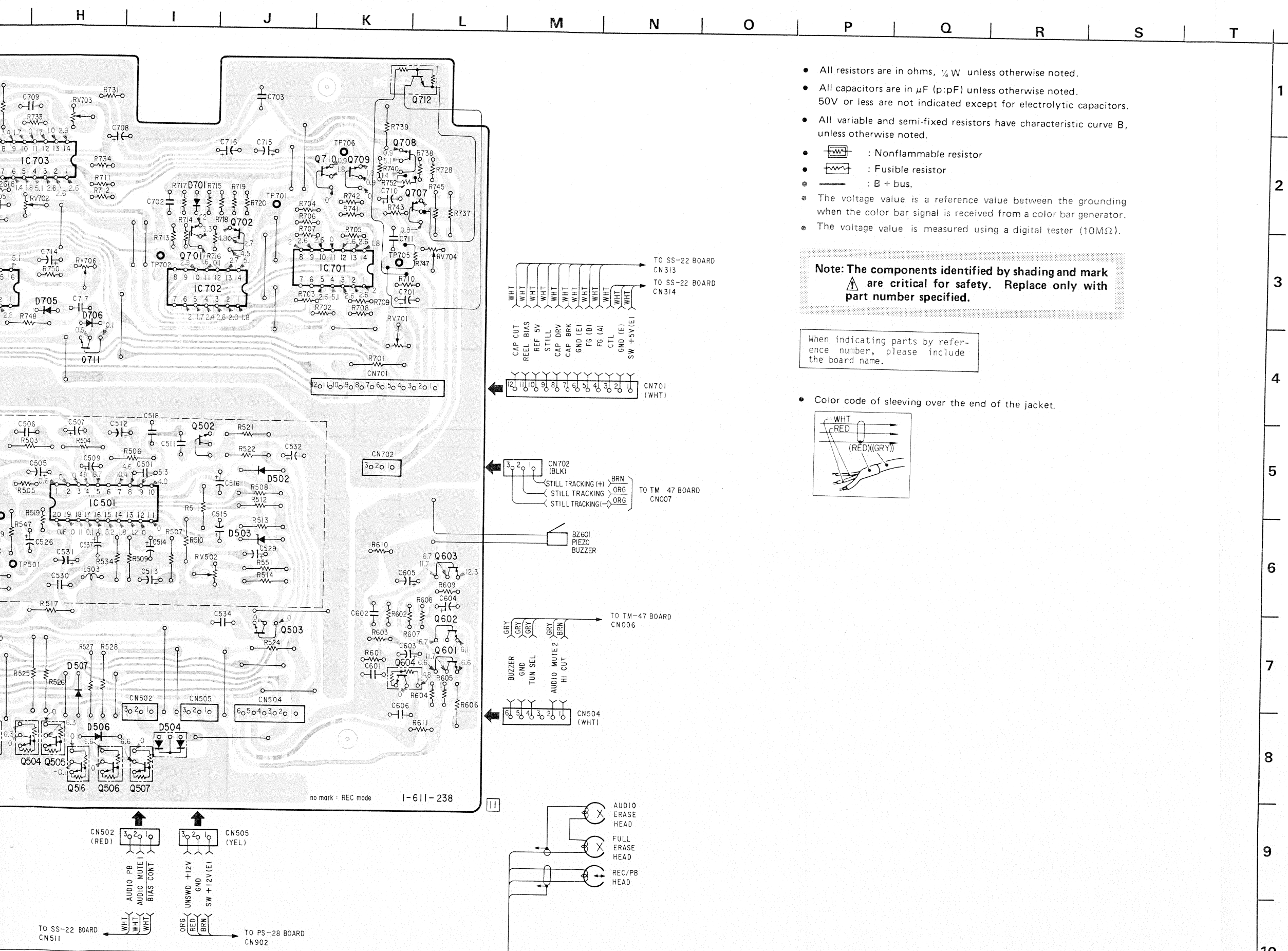
- Ref. No. AS-8 BOARD : 3000 series -



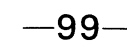


AS-8 (AUDIO RECORD/PLAYBACK PROCESS, VIDEO LA) PRINTED WIRING BOARDS - Ref. No. AS-8 BOARD : 3000 series -





A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
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W



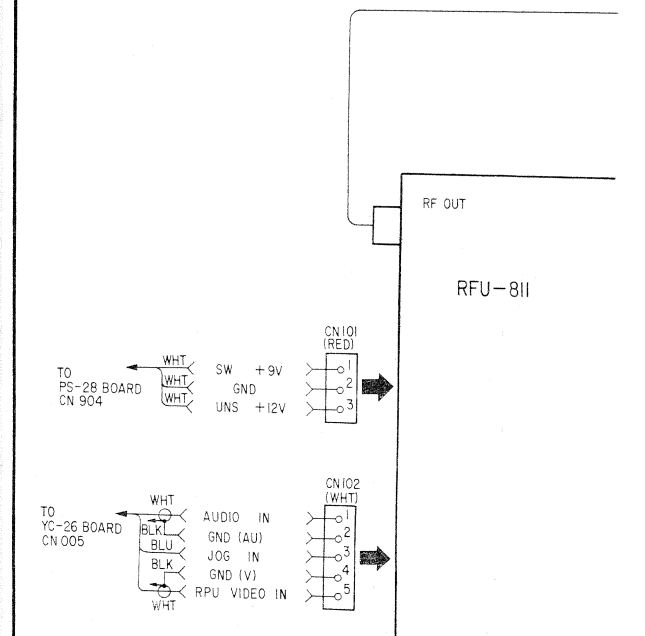
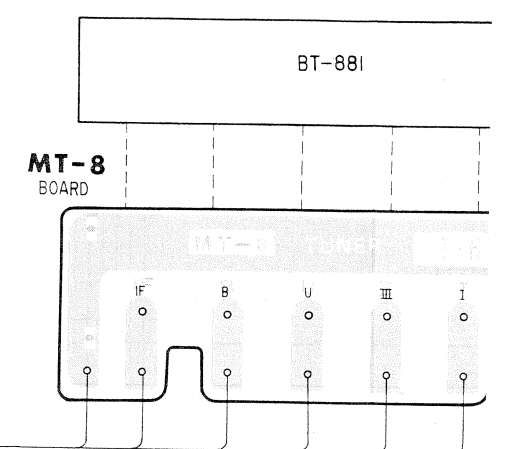
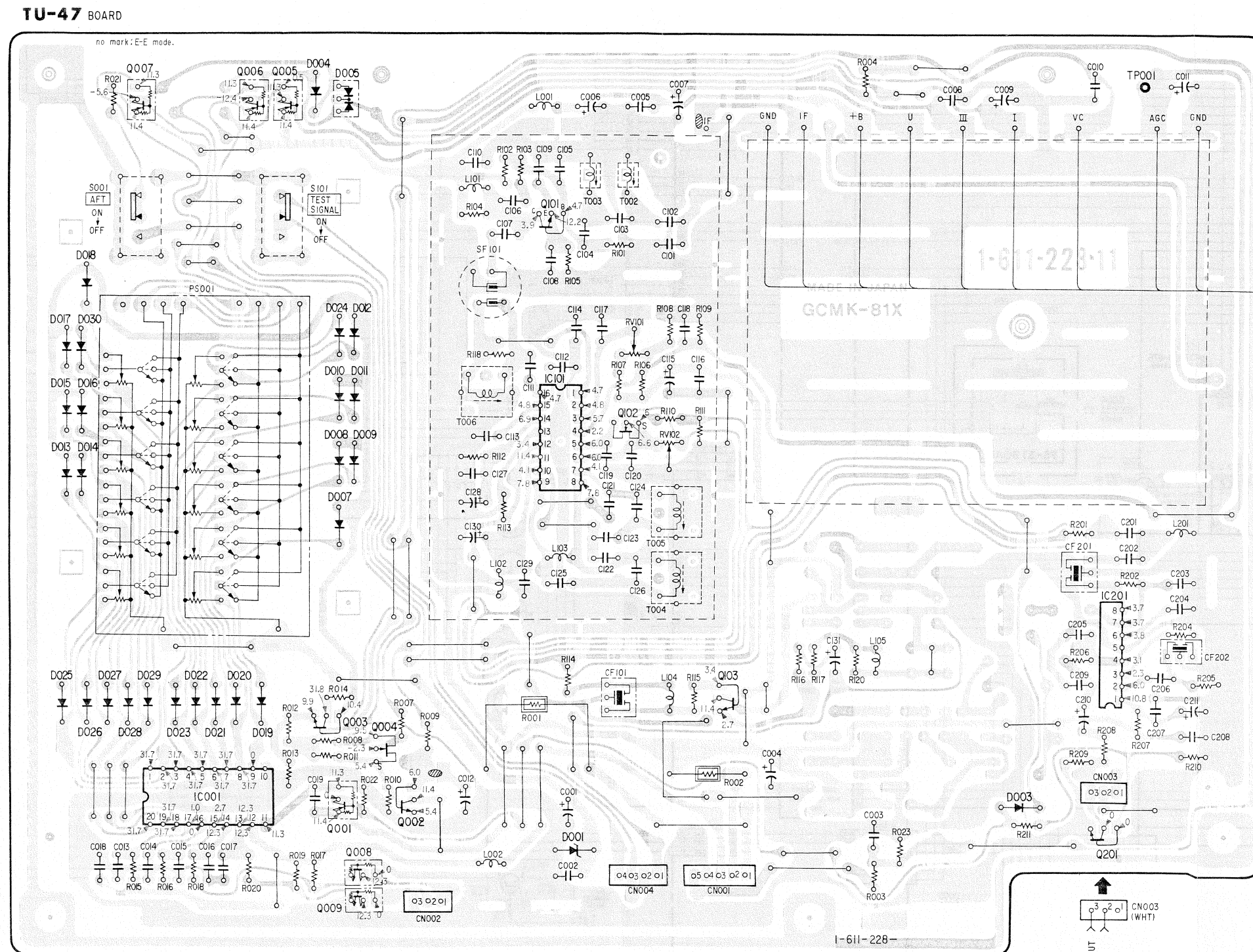
TUNER TUNER

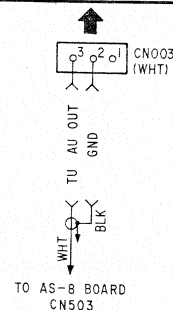
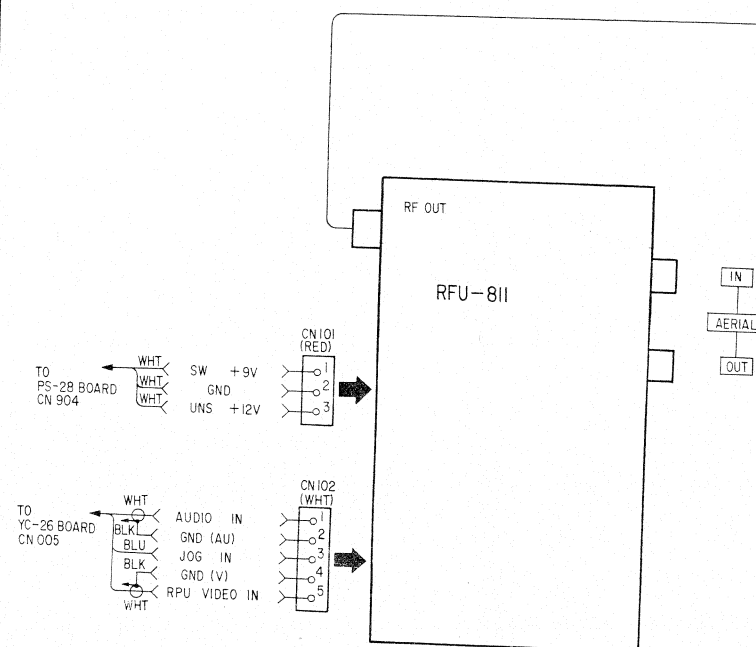
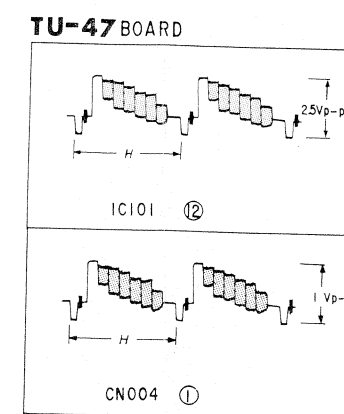
TU-47 (VIF, SIF, AFT, CHANNEL PRESET), MT-8 (TUNER) PRINTED WIRING BOARDS
- Ref. No. TU-47 BOARD : 5000 series -

A B C D E F G H I J K L M N O P

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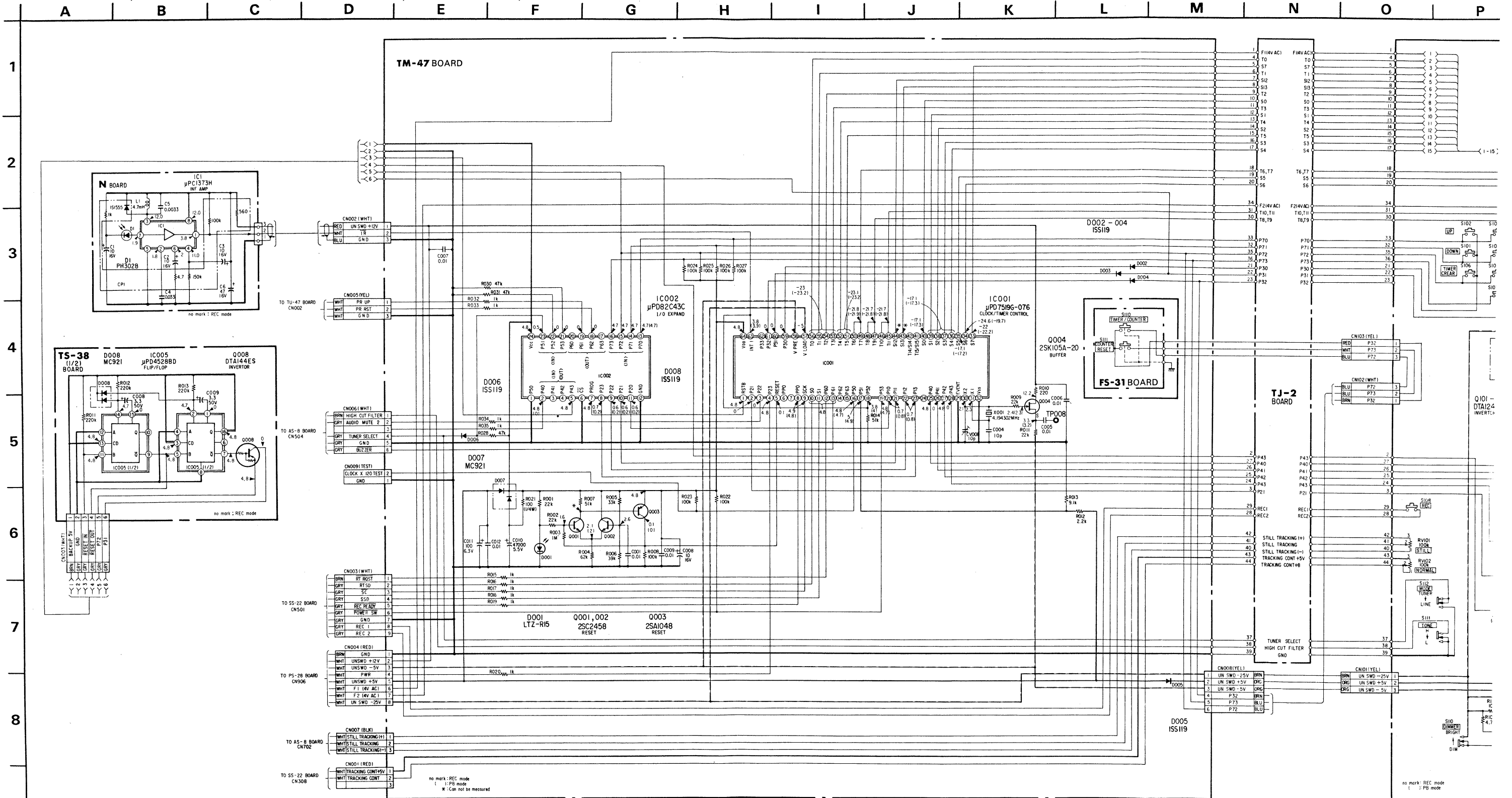
Q, IC	D	ADJ TP
Q07, Q06, Q05	004 005	001
IC101	018 024, 012 017, 030	RV101 RV102
IC101	010, 011 015, 016 008, 009 013, 014 007	
IC201	025, 027, 029, 022 026, 028, 023, 021 019	
IC001	001, 002 201 003 008 009	003 001
Q, IC	D	ADJ TP





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4-7. TM-46 (TIMER INDICATOR, TIMER/REMOTE CONTROL), TM-47 (CLOCK/TIMER CONTROL), FS-31 (SWITCH), N (INFRARED AMP), TS-38 (FLIP/FLOP), TJ-2 (FLEXIBLE INTERMEDIATION) SCHEMATIC DIAGRAM
 - Ref. No. TM-46, TM-47 BOARD : 6000 series, FS-31 BOARD : 7000 series, N BOARD : 3000 series, TS-38 BOARD : 2900 series -



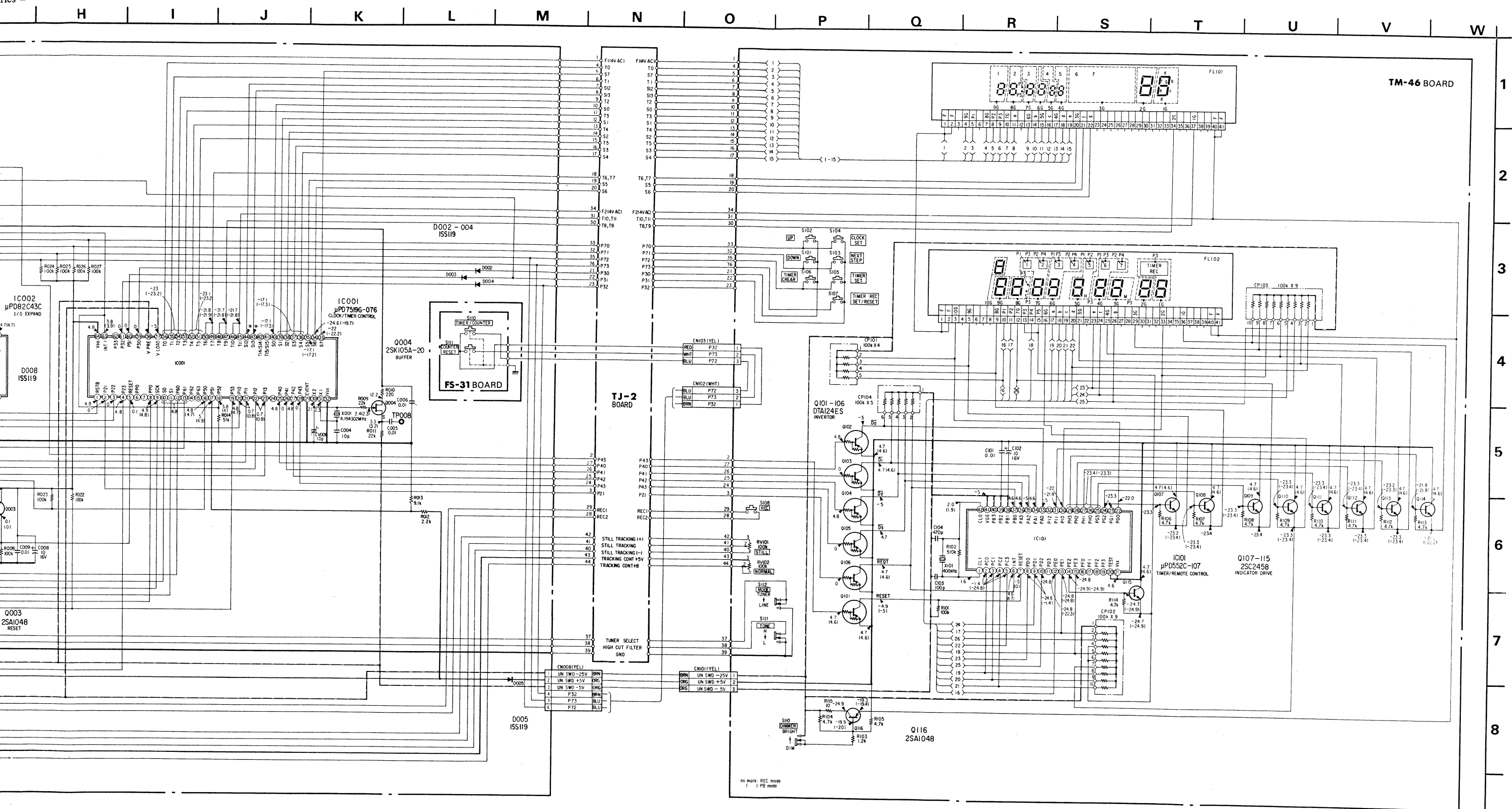
- All resistors are in ohms, 1/6W unless otherwise noted.
- All capacitors are in μF (p: pF) unless otherwise noted. 50V or less are not indicated except for electrolytic capacitors.
- All variable and semi-fixed resistors have characteristic curve B, unless otherwise noted.
- : Nonflammable resistor
- : Fusible resistor
- : B + bus.
- The voltage value is a reference value between the grounding when the color bar signal is received from a color bar generator.
- The voltage value is measured using a digital tester (10M Ω).

Note: The components identified by shading and mark are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

TIMER TIMER

(SWITCH), N (INFRARED AMP), TS-38 (FLIP/FLOP), TJ-2 (FLEXIBLE INTERMEDIATION) SCHEMATIC DIAGRAM



grounding
generator.
(10M Ω).

Note: The components identified by shading and mark  are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

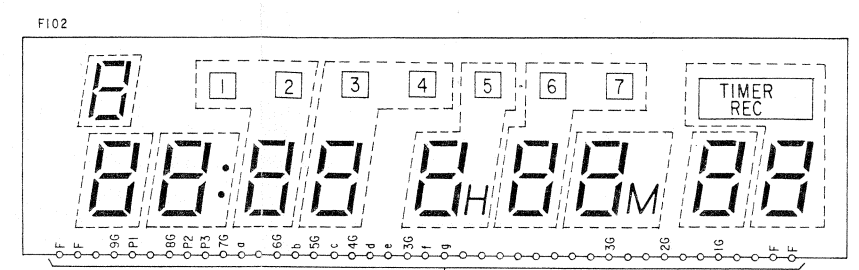
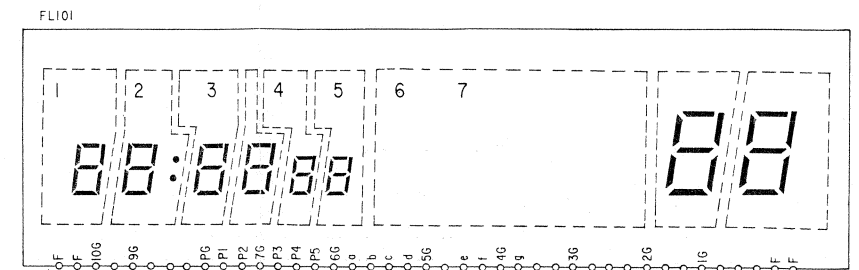
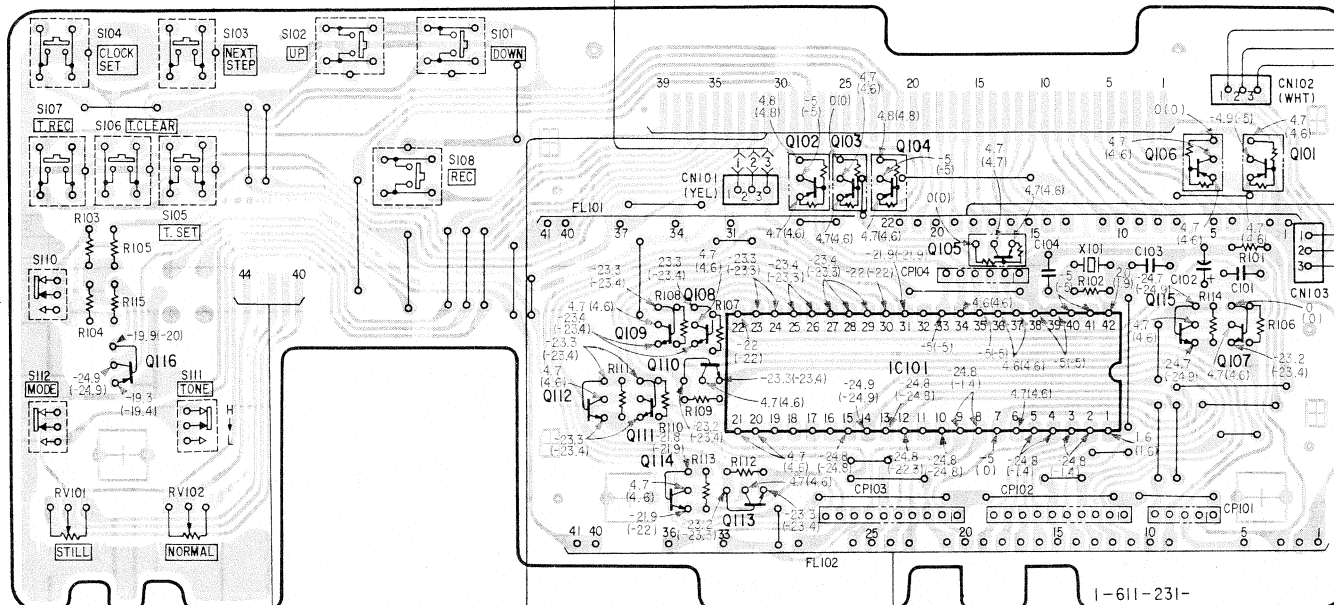
TIMER TIMER

TM-46 (TIMER INDICATOR, TIMER/REMOTE CONTROL), TM-47 (CLOCK/TIMER CONTROL), FS-31 (SWITCH), N (INFRARED AMP), TS-38 (FLIP/FLOP), TJ-2 (FLEXIBLE INTERMEDIATION) PRINTED WIRING BOARDS
 - Ref. No. TM-46, TM-47 BOARD : 6000 series, FS-31 BOARD : 7000 series, N BOARD : 3000 series, TS-38 BOARD : 2900 series -

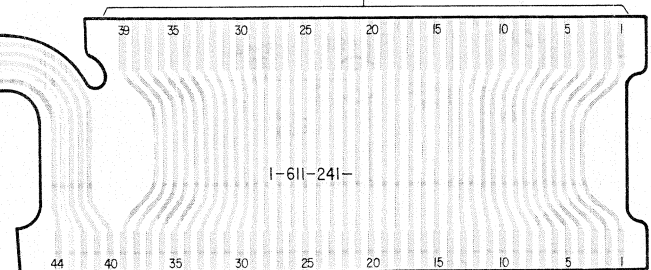
A B C D E F G H I J K L M N O P

TM-46 BOARD

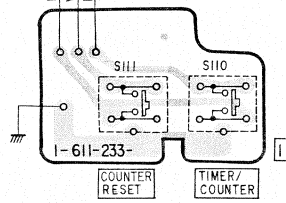
Q, IC	
102, 103, 104	
105	
108, 115, 109, 107, 116, 110, 112, 113	
114, 113	
Q, IC	



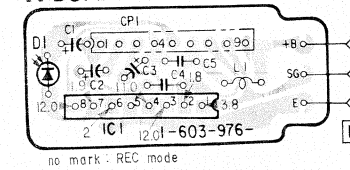
TJ-2 BOARD



FS-31 BOARD

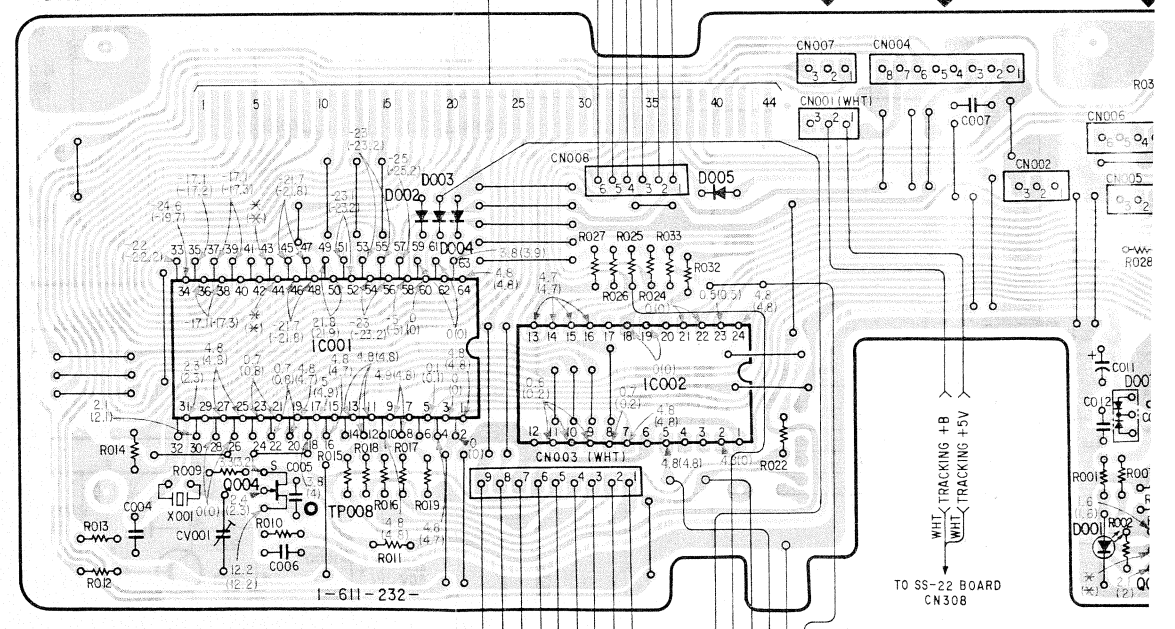


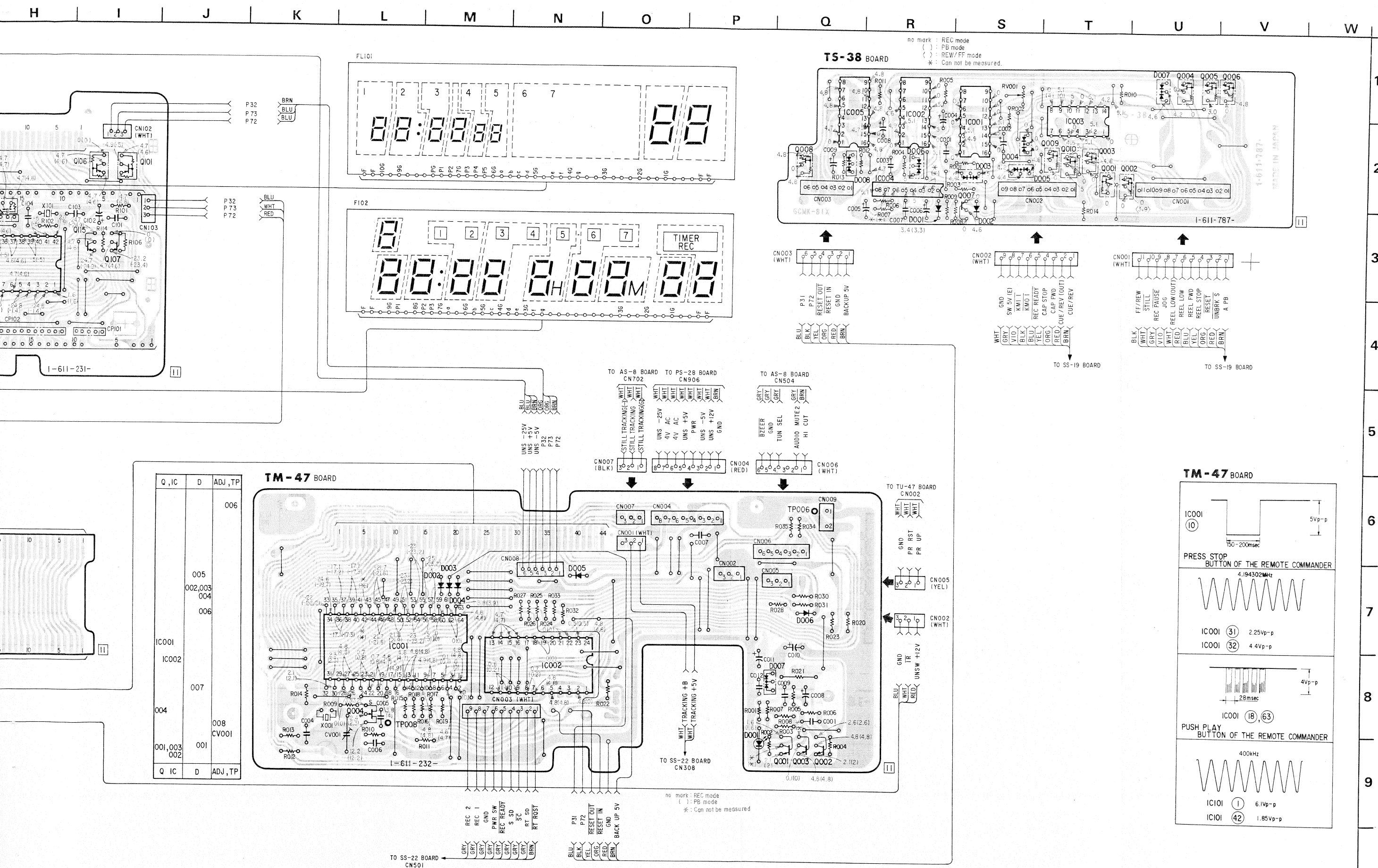
N BOARD



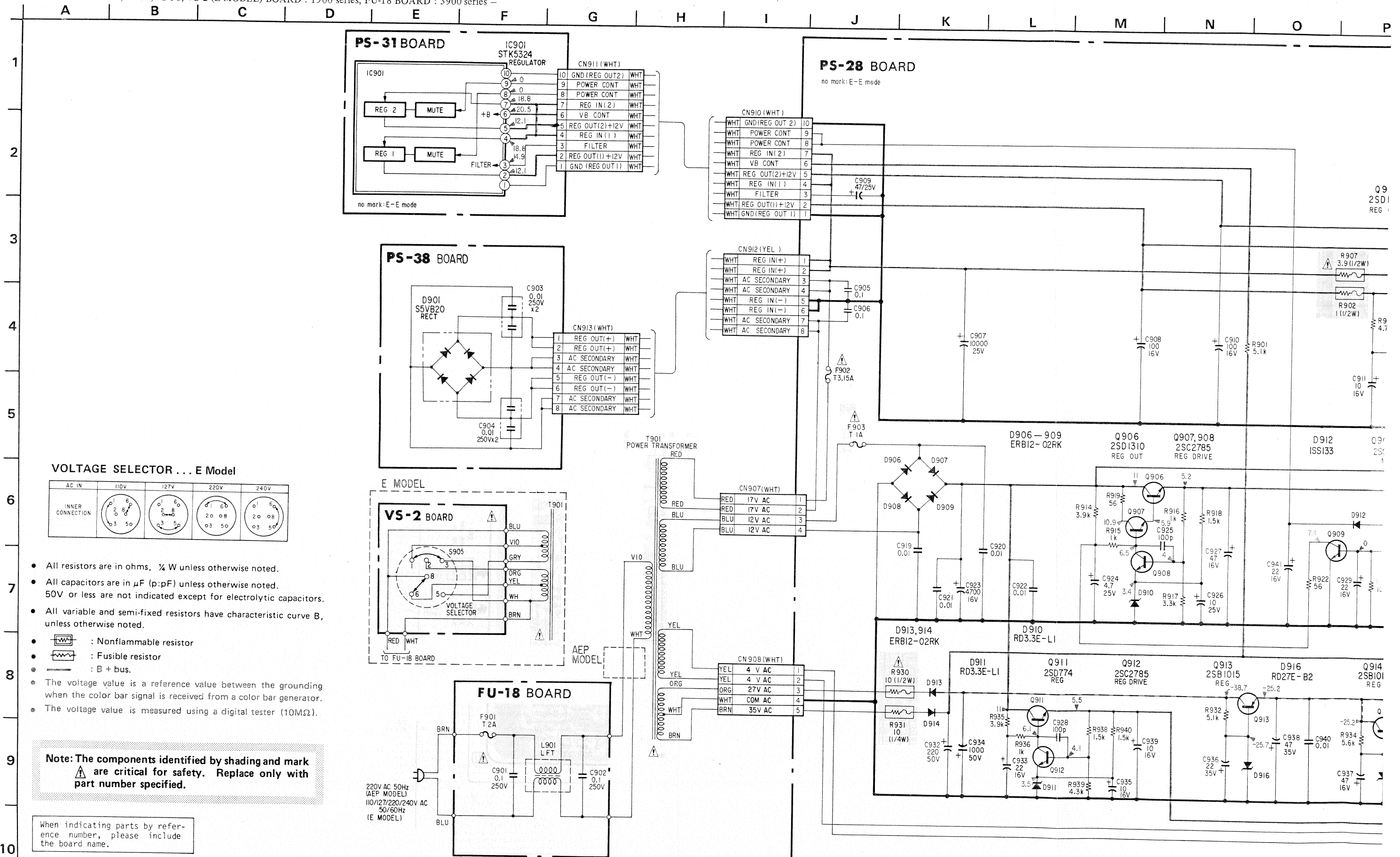
TM-47 BOARD

Q, IC	D	ADJ, TP
IC001		006
IC002		005
	002, 003	004
	006	
	007	
004		008
	001	CV001
001, 003, 002		
Q, IC	D	ADJ, TP



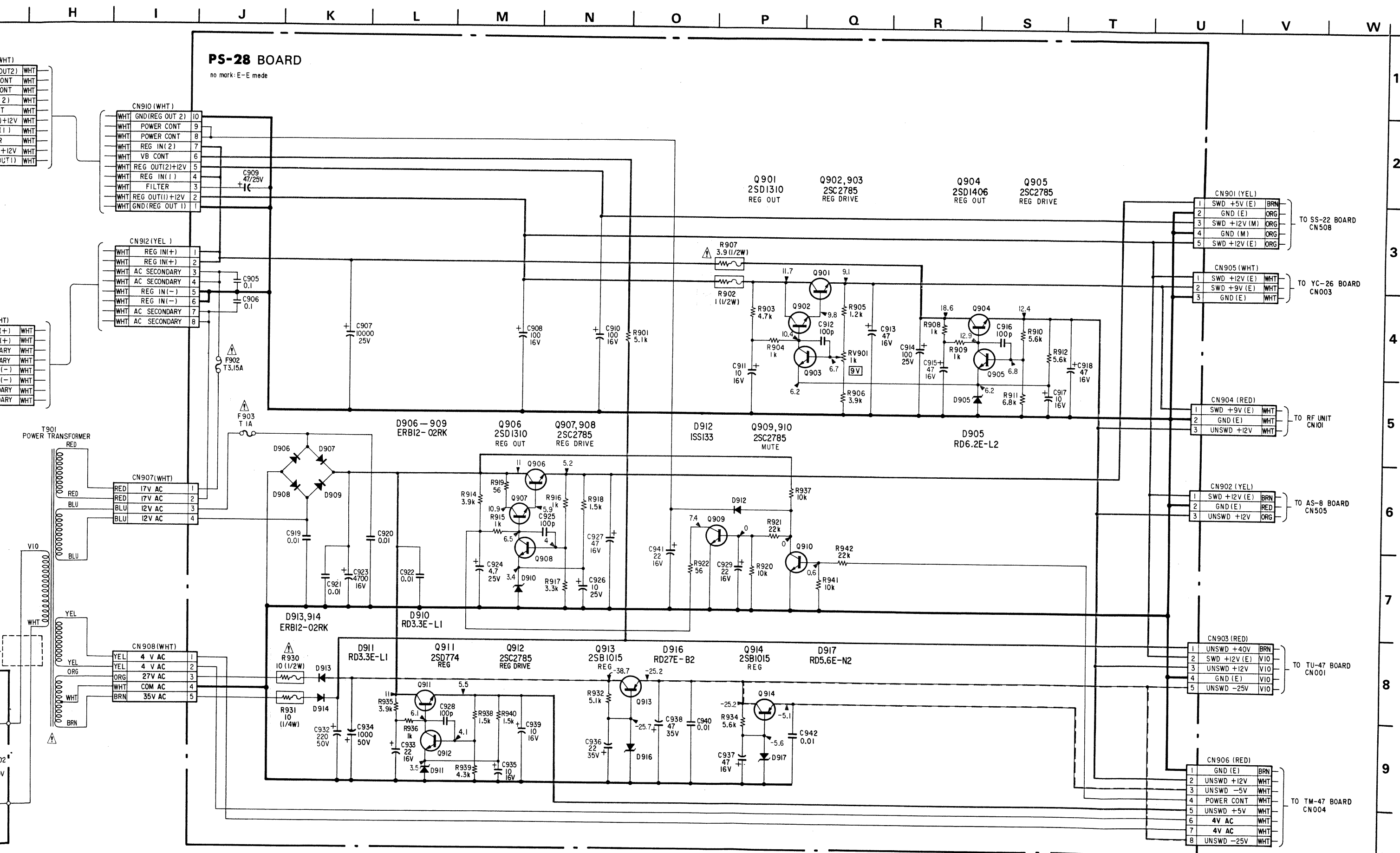


4-8. PS-28 (POWER SUPPLY), PS-31 (REGULATOR), PS-38 (RECT), FU-18 (LINE FILTER), {VS-2 (VOLTAGE SELECTOR)... E MODEL} SCHEMATIC DIAGRAM
 — Ref. No. PS-28, PS-31, PS-38, VS-2 (E MODEL) BOARD : 1900 series, FU-18 BOARD : 3900 series —



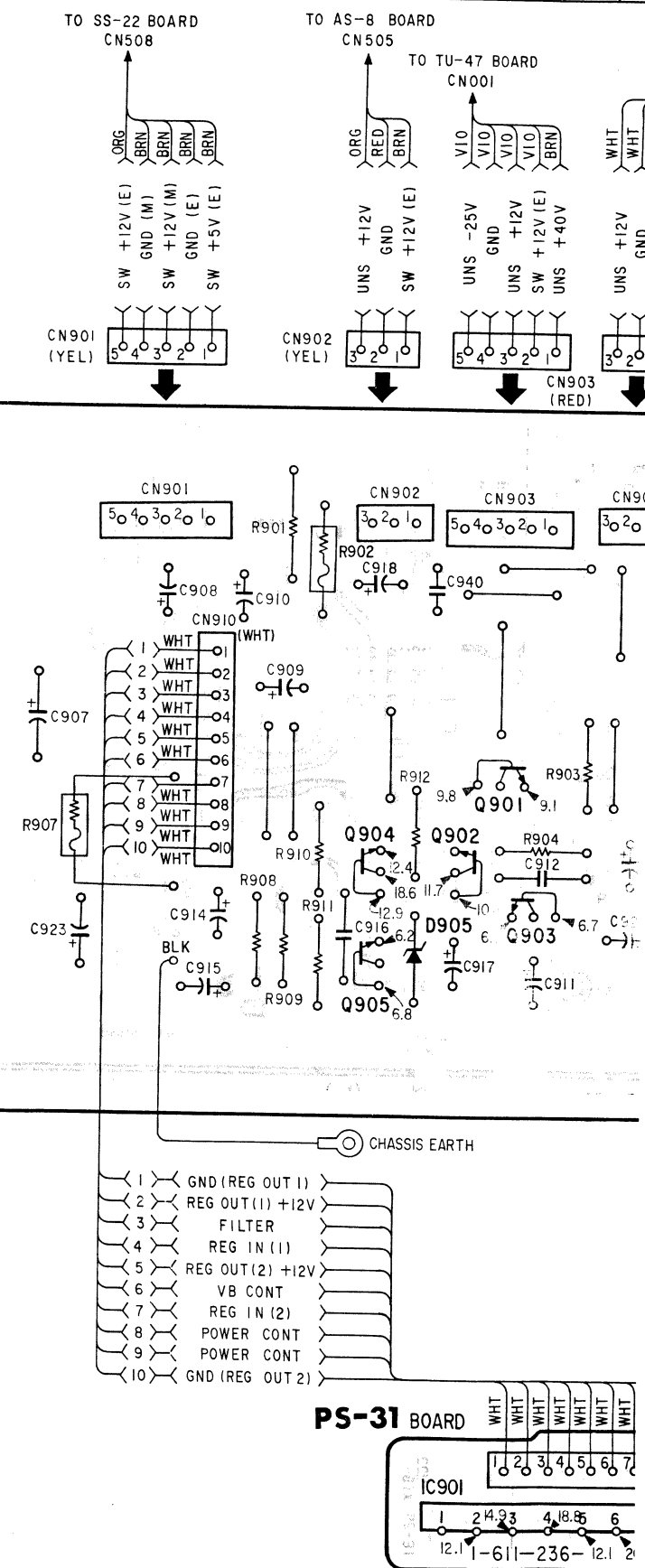
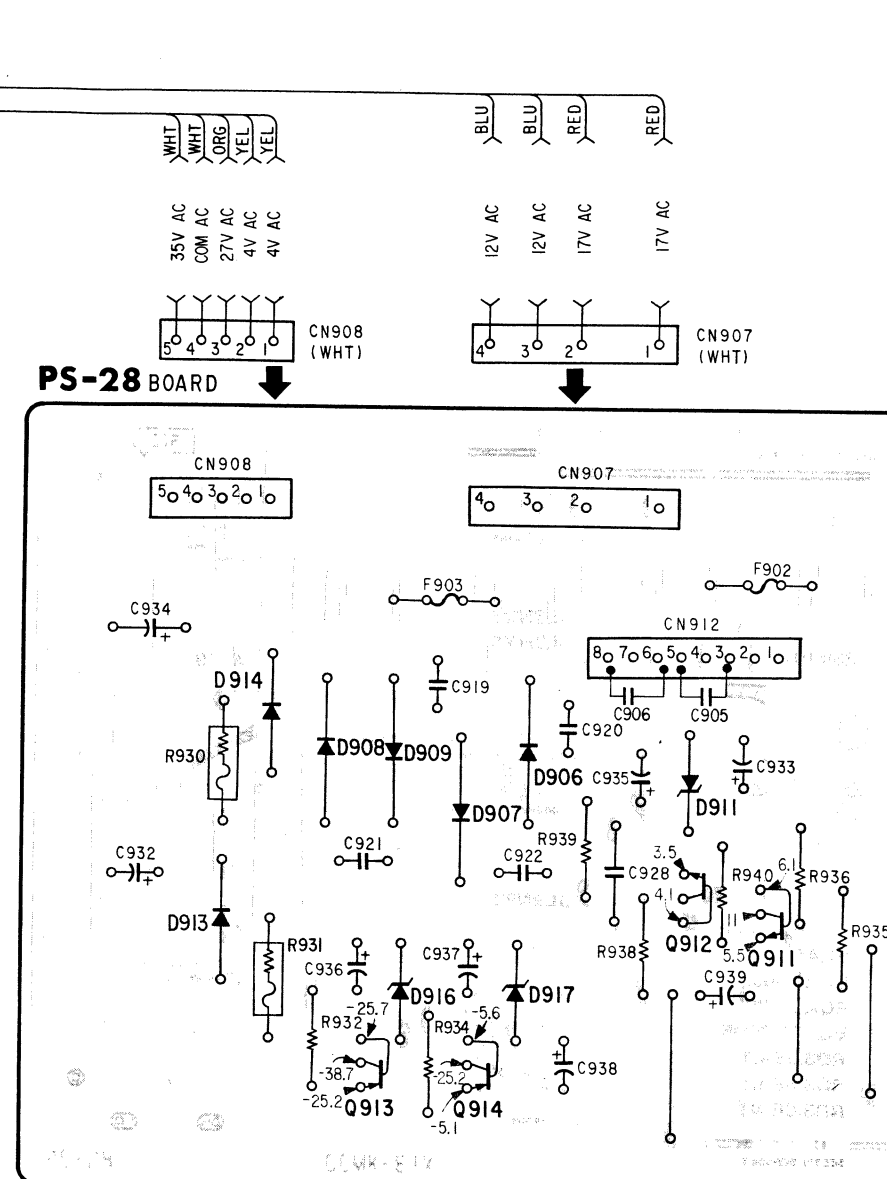
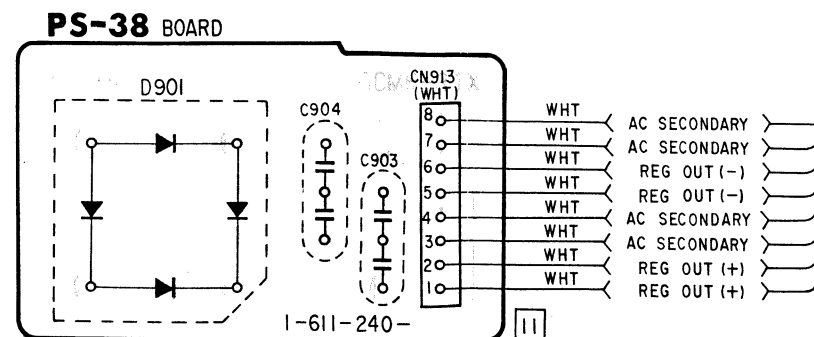
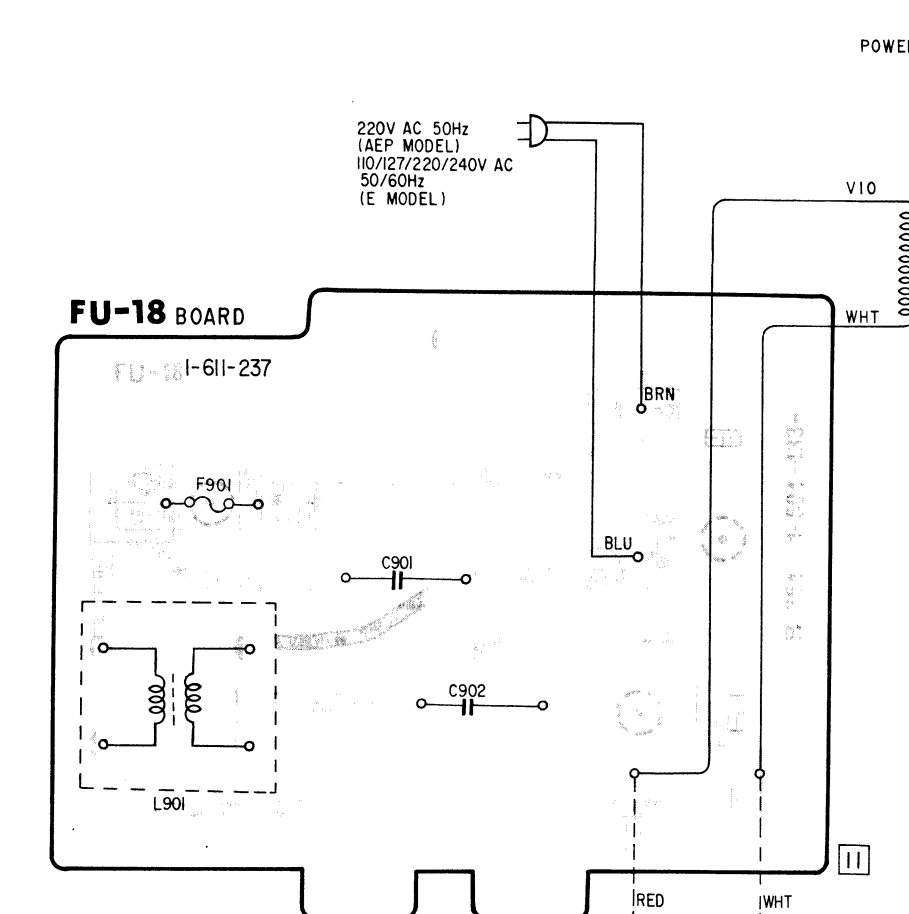
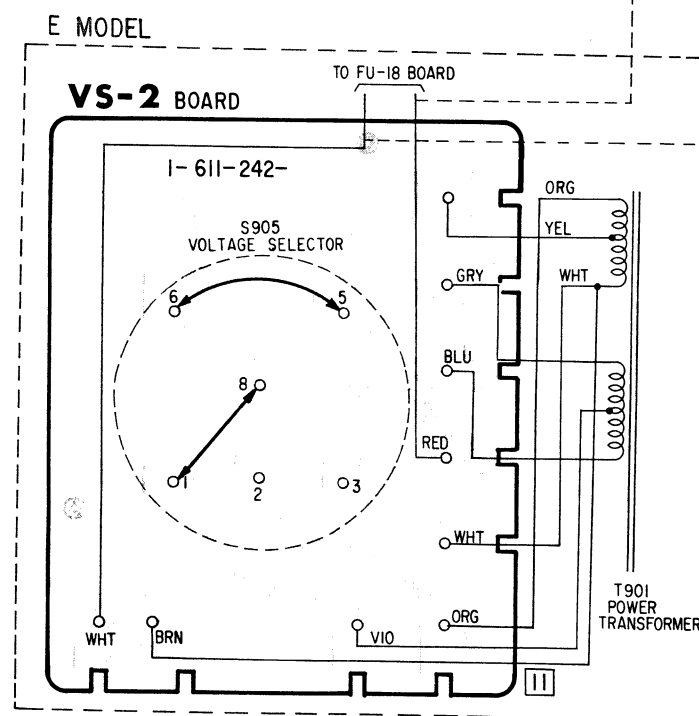
POWER SUPPLY POWER SUPPLY

AGE SELECTOR) ... E MODEL SCHEMATIC DIAGRAM



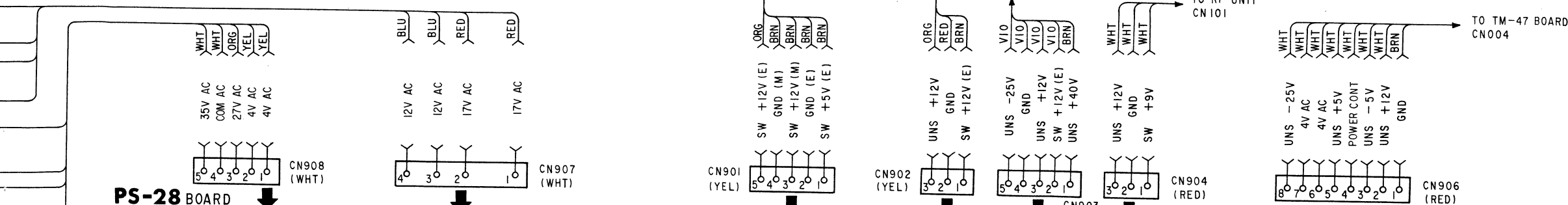
POWER SUPPLY POWER SUPPLY

PS-28 (POWER SUPPLY), PS-31 (REGULATOR), PS-38 (RECT), FU-18 (LINE FILTER), VS-2 (VOLTAGE SELECTOR) ... E MODEL | PRINTED WIRING BOARDS
 - Ref. No. PS-28, PS-31, PS-38, VS-2 (E MODEL) BOARD : 1900 series, FU-18 BOARD : 3900 series -

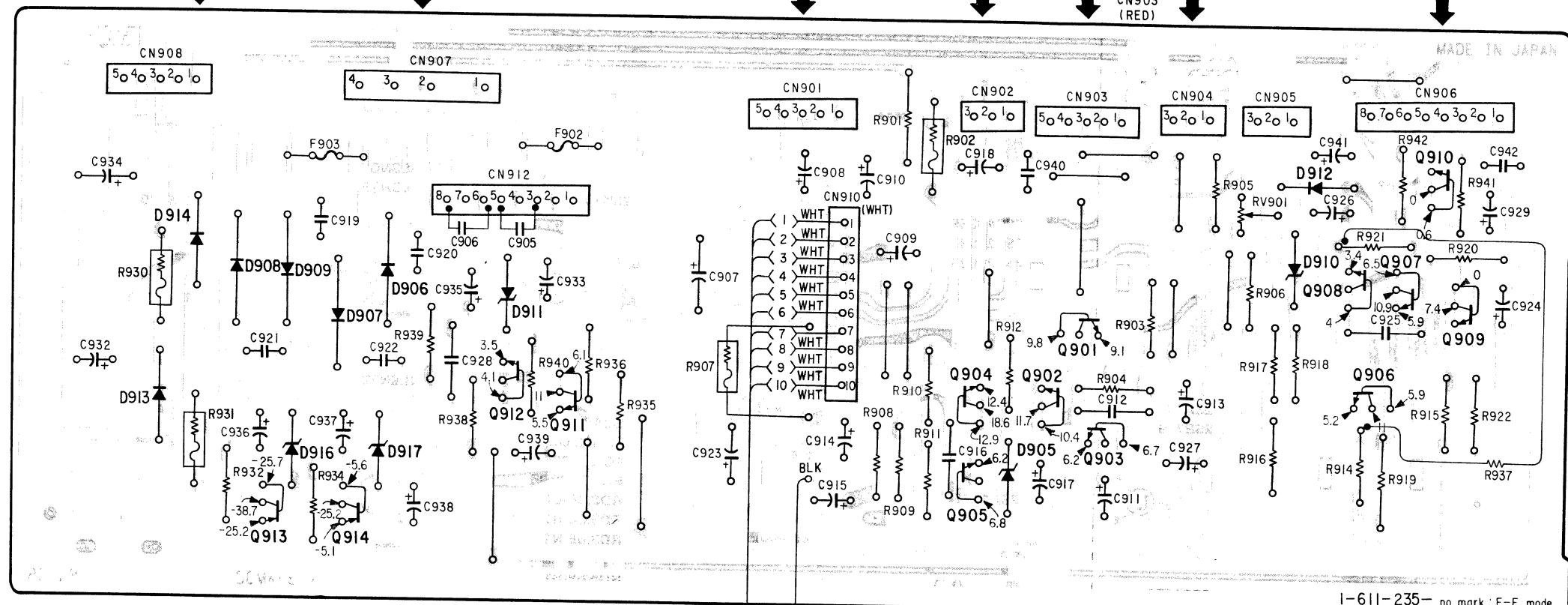


H I J K L M N O P Q R S T U V W

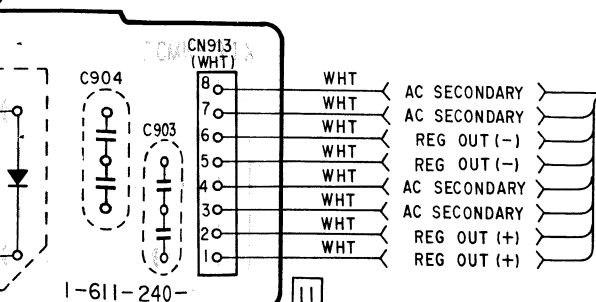
FORMER



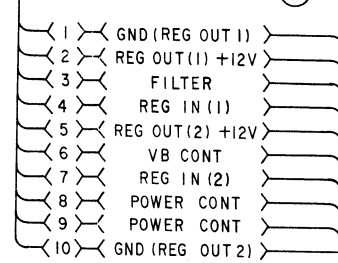
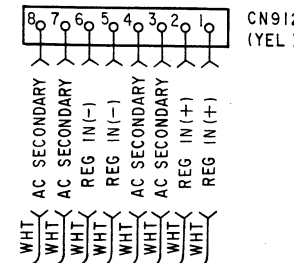
PS-28 BOARD



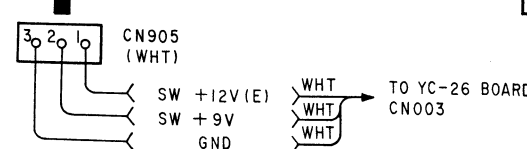
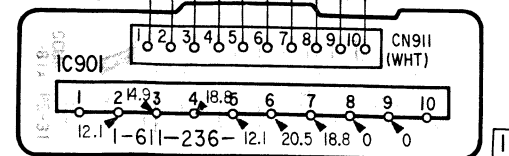
Q	D	ADJ
910	912	RV901
908,907	914 910	
909	908,909	
901	911 906	
912,911,906		
904,902	913	
903		
905	916,917	
913,914	905	



I-611-240-

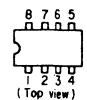


PS-31 BOARD

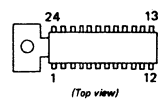


4-9. SEMICONDUCTORS

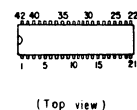
BA4558
LM358P
NJM4558D
 μ PC358C
 μ PC4558C



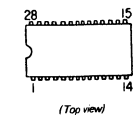
CX135



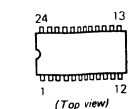
CX194B-0
CX194B-5
 μ PD552C-107



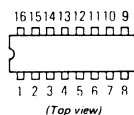
CX862
CX863A
CX869A



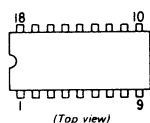
CX864
CX867
CX868
 μ PD82C43C



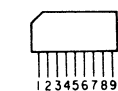
CX870A
HD14053BP
MB84053B
TA7607AP
TC4053BP
TC4528BP
 μ PD4053BC
 μ PD4528BC



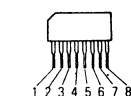
CX882
M50119P



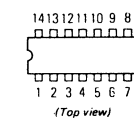
CX894
TA7320P



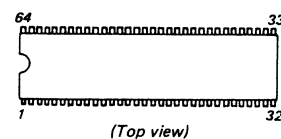
CX7926
CX20008
CX20061
 μ PC1373H
 μ PC1391H



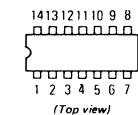
CX7945



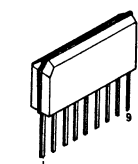
CX20016
MB88421-123M



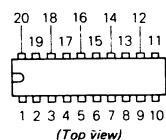
HD14011BP
HD14013BP
HD14069UBP
LC4081B
MB3614
MB14013B
MB84011B
MB84013B
MB84069UBP
MB84082B
TC4011BP
TC4013BP
TC4030BP
TC4069UBP
TC4081BP
 μ PC324C
 μ PD4011BC
 μ PD4013BC
 μ PD4030BC
 μ PD4069UBC
 μ PD4081BC



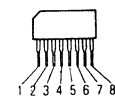
LA7205



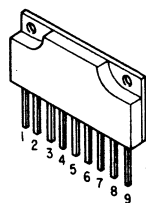
LA7046
M50761-633P



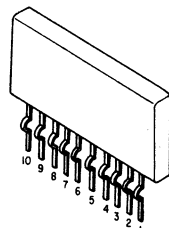
M51848L



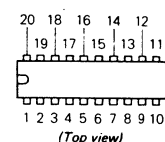
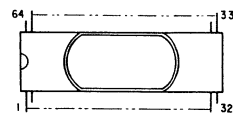
M54543L



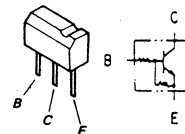
STK5324



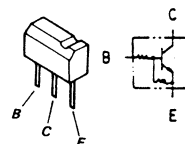
TA7060AP

 μ PC1362C μ PD7519G-076

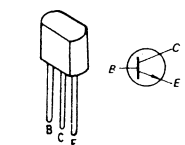
DTA124ES
DTA144ES



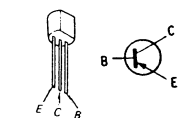
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DTC144ES



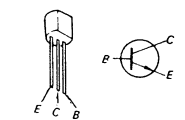
MC931



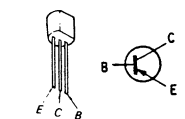
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2SB739



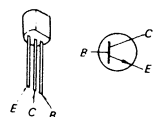
2SC1474
2SC1475
2SC1475-13
2SD788
2SD789



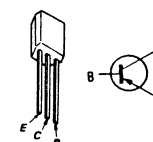
2SA844



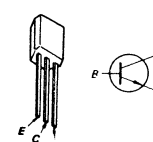
2SC2001
2SC2120
2SC2362



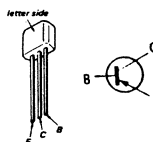
2SA1048
2SA1048-GR
2SA1115



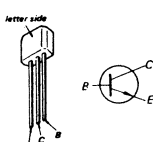
2SC403SP
2SC2458
2SC26023



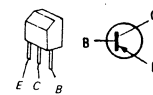
2SA1175



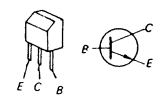
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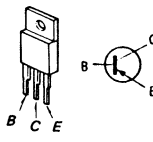
2SB733



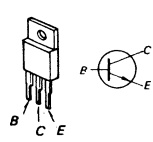
2SD773
2SD774



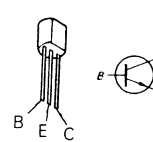
2SB1015



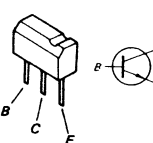
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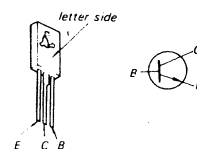
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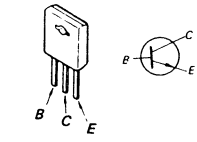
2SC2673



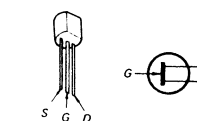
2SD882



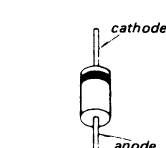
2SD1310



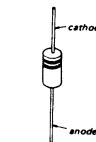
2SK105A-30
2SK107



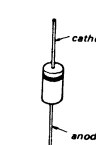
EQA02-05C5
EQA02-06A1
EQA02-06AB5
EQA02-06C5
EQA02-09D5
RD3.3E-L1
RD3.6E-L1
RD3.6E-N1
RD3.6E-N2
RD5.6E-B1
RD5.6E-N2
RD6.2E-B
RD6.2E-L2
RD10E-B1
RD10E-2
RD27E-B2



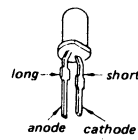
EQA02-10AB5
EQA02-25B



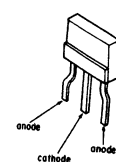
ERD12-02RK
10E2



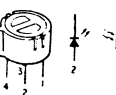
GL3NG5
GL3HY5



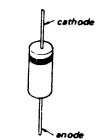
GL9NP2



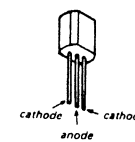
GP2S02A
GP2S02B
GP2S02C



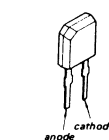
LTZ-R15



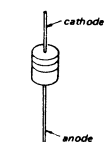
MC911
MC921



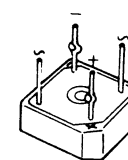
PH302B



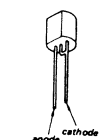
1SS119
1SS133
1SS148
1SS200
1SS201
1SS202-1



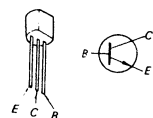
S5VB20



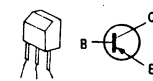
μ PC574J
 μ PC574J-G



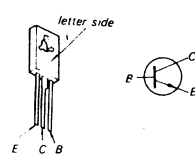
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2SC2120
2SC2362



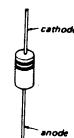
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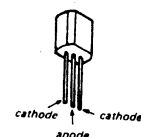
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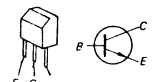
EQA02-10AB5
EQA02-25B



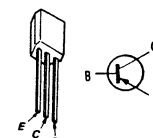
MC911
MC921



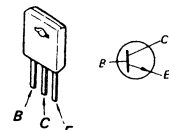
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2SD774



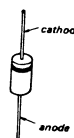
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2SA1048-GR
2SA1115



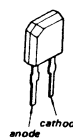
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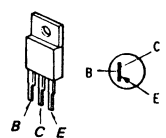
ERD12-02RK
10E2



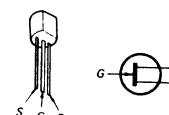
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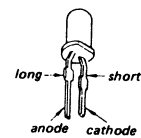
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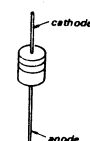
2SK105A-30
2SK107



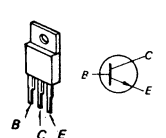
GL3NG5
GL3HY5



1SS119
1SS133
1SS148
1SS200
1SS201
1SS202-1

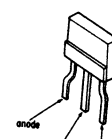


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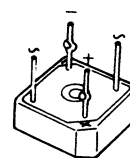


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EQA02-06A1
EQA02-06AB5
EQA02-06C5
EQA02-09D5

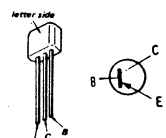
GL9NP2



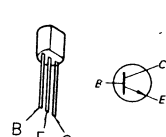
S5VB20



2SA1175

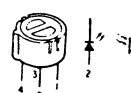


2SC2009

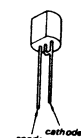


RD3.3E-L1
RD3.6E-L1
RD3.6E-N1
RD3.6E-N2
RD5.6E-B1
RD5.6E-N2
RD6.2E-B
RD6.2E-L2
RD10E-B1
RD10E-2
RD27E-B2

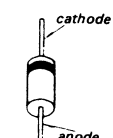
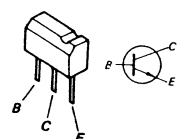
GP2S02A
GP2S02B
GP2S02C



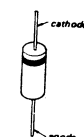
μPC574J
μPC574J-G



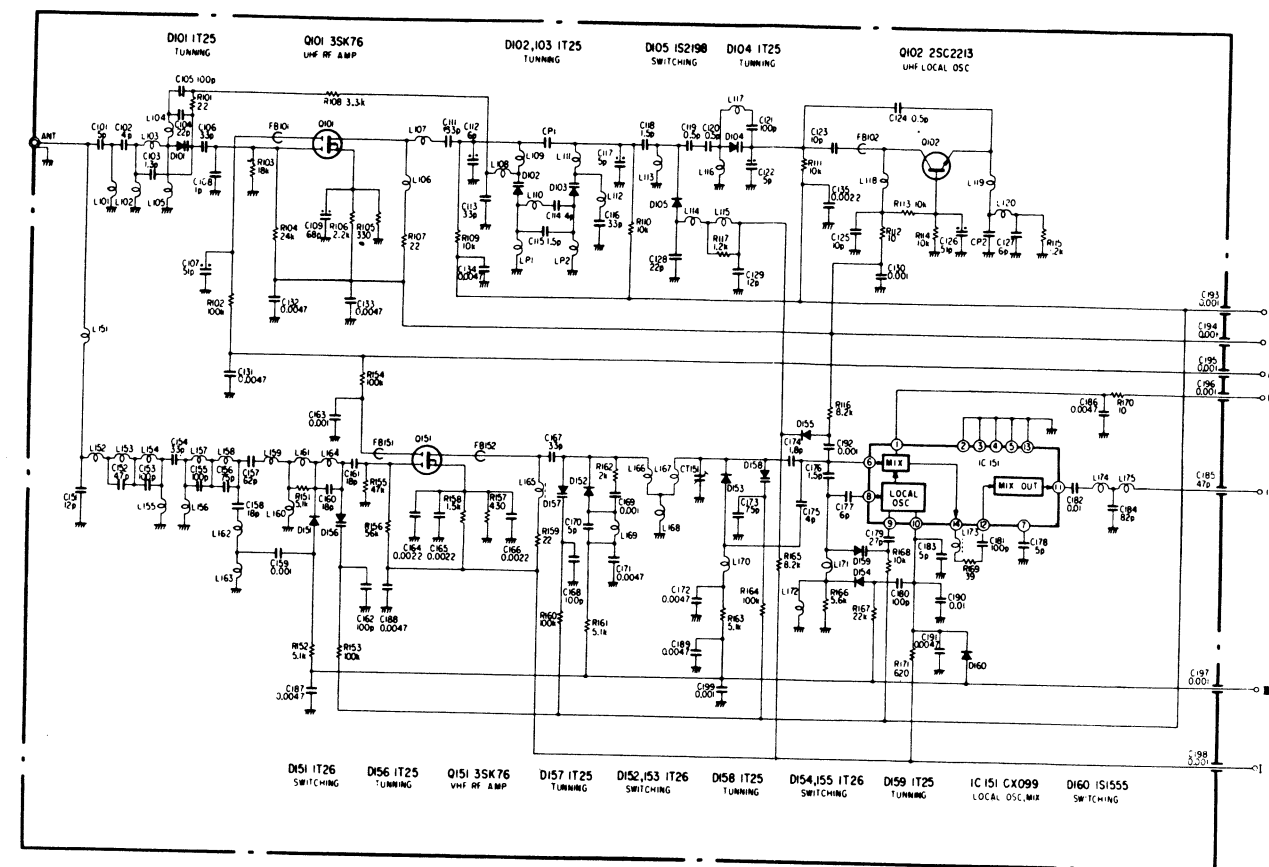
2SC2673



LTZ-R15



4-10. VHF/UHF TUNER SCHEMATIC DIAGRAM — BT-881 tuner —



Note: Tuner reference numbers are not included in the Electrical Parts List.

SECTION 5 EXPLODED VIEWS

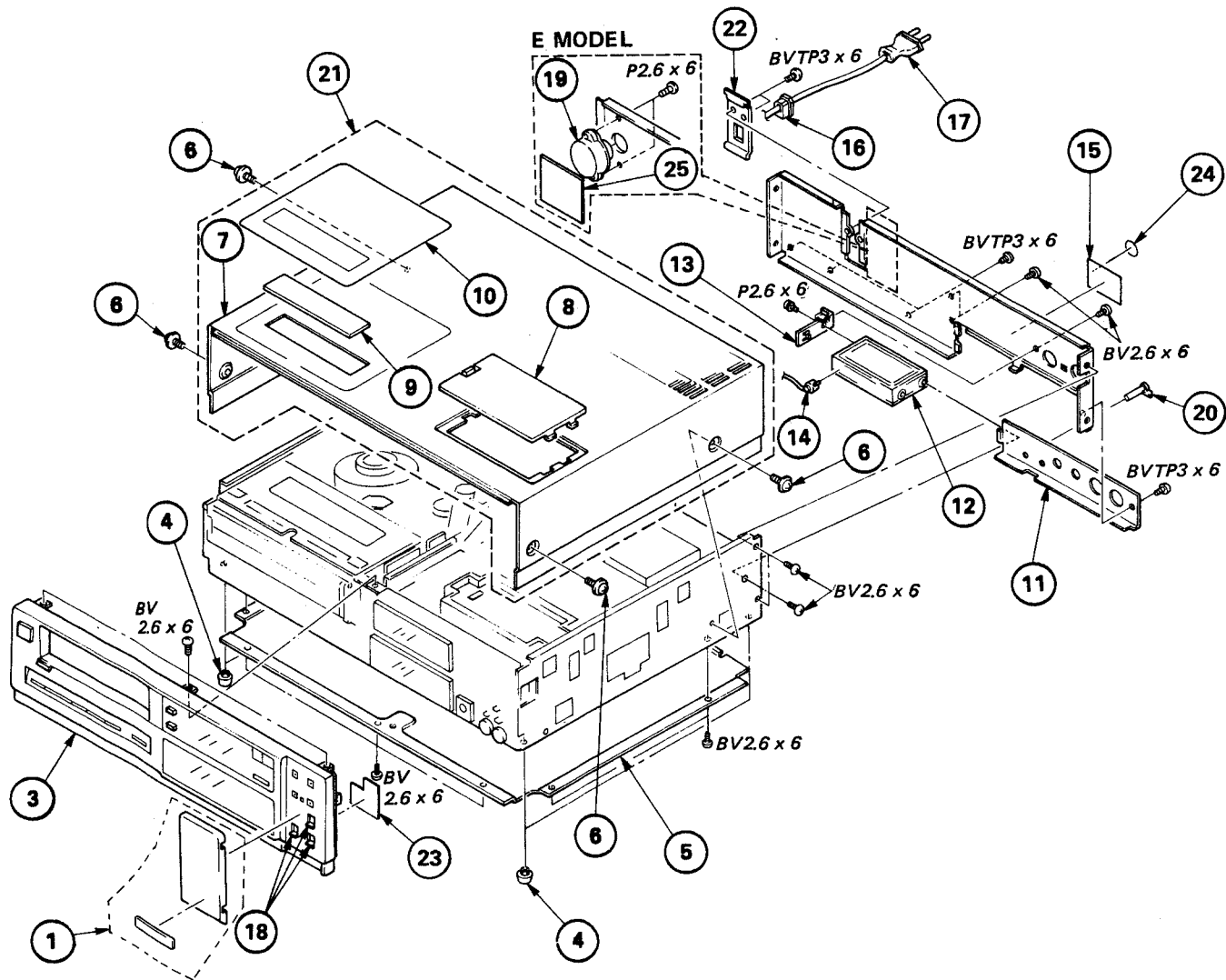
NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

- Items marked "▲" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

5-1. FRONT PANEL AND CABINET ASSEMBLIES

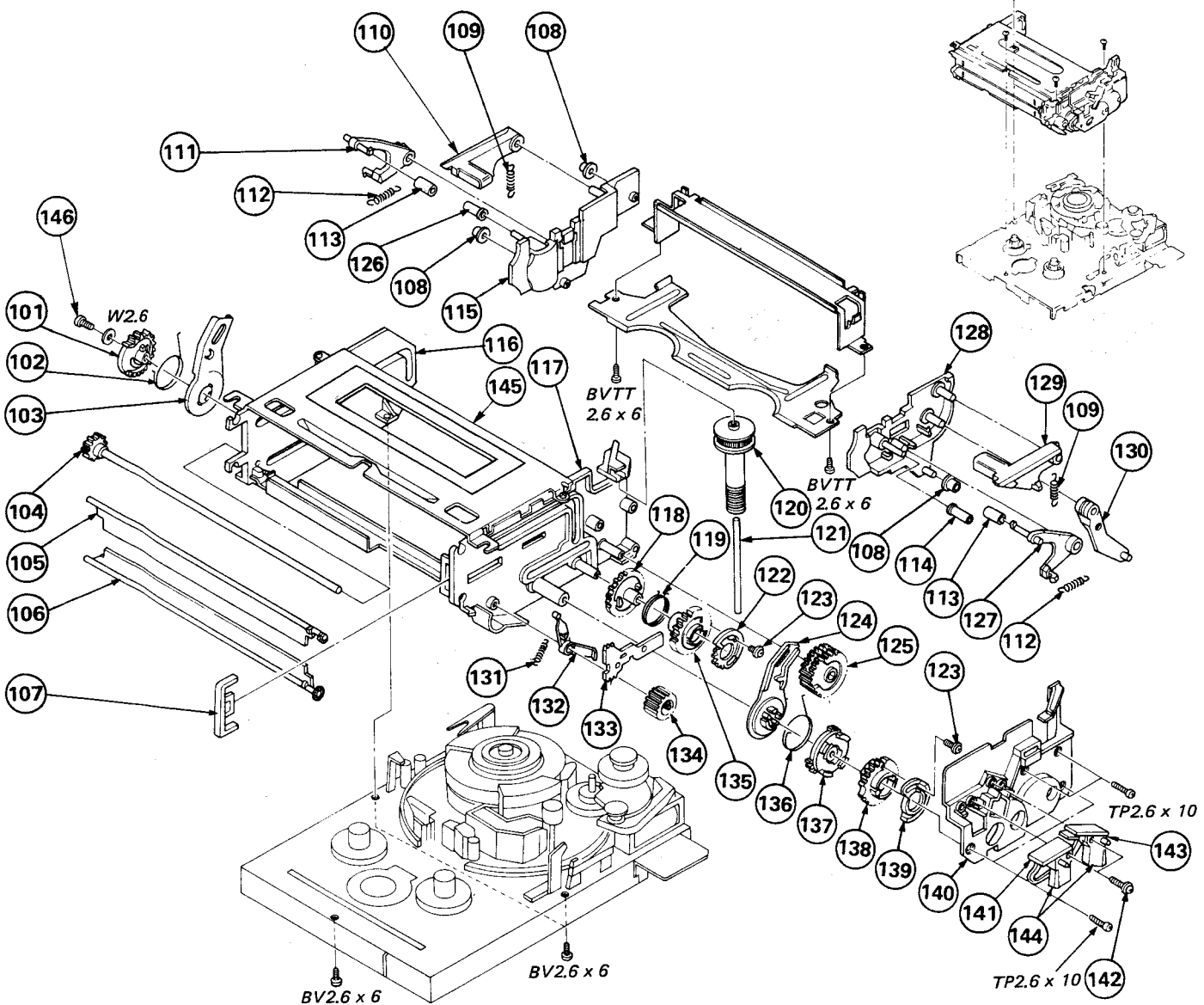


No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
1	X-3678-863-1	DOOR, FRONT ASSY		14	▲:1-555-110-00	CABLE, PIN	
3	X-3678-858-3	PANEL ASSY, FRONT		15	▲:3-680-712-00	LABEL, MODEL NUMBER (AEP MODEL)	
4	3-670-155-11	LEG		▲:3-683-002-01	LABEL, MODEL NUMBER (E MODEL)		
5	3-680-742-00	PLATE, BOTTOM		16	▲:3-703-244-00	BUSHING, CORD	
6	3-703-354-01	SCREW (OS), CASE, CLAW		17	▲:1-534-817-XX	CORD, POWER	
7	X-2383-101-0	CASE ASSY (A), UPPER		18	3-680-748-00	KNOB, SLIDE	
8	3-680-738-00	LID, PRESET		19	▲:1-552-304-00	SWITCH, VOLTAGE SELECTOR (E MODEL) S905	
9	3-682-625-00	WINDOW, TAPE		20	3-670-149-00	KNOB, V SYNCHRONOUS	
10	3-679-380-41	PLATE, ORNAMENTAL		21	A-6703-393-A	CASE BLOCK ASSY, UPPER	7-10
11	3-680-720-00	PANEL, CONNECTOR		22	▲:3-680-715-00	BRACKET, AC CORD	
12	▲:1-464-293-11	MODULATOR, RF BOOSTER(RFU-811)		23	3-680-780-02	RETAINER, SLIDE KNOB	
13	▲:3-680-786-00	BRACKET, RBM		24	▲:3-656-407-00	LABEL, F MARK (AEP MODEL)	
				25	▲:1-611-242-00	VS-2 BOARD (E MODEL)	

[illegible]

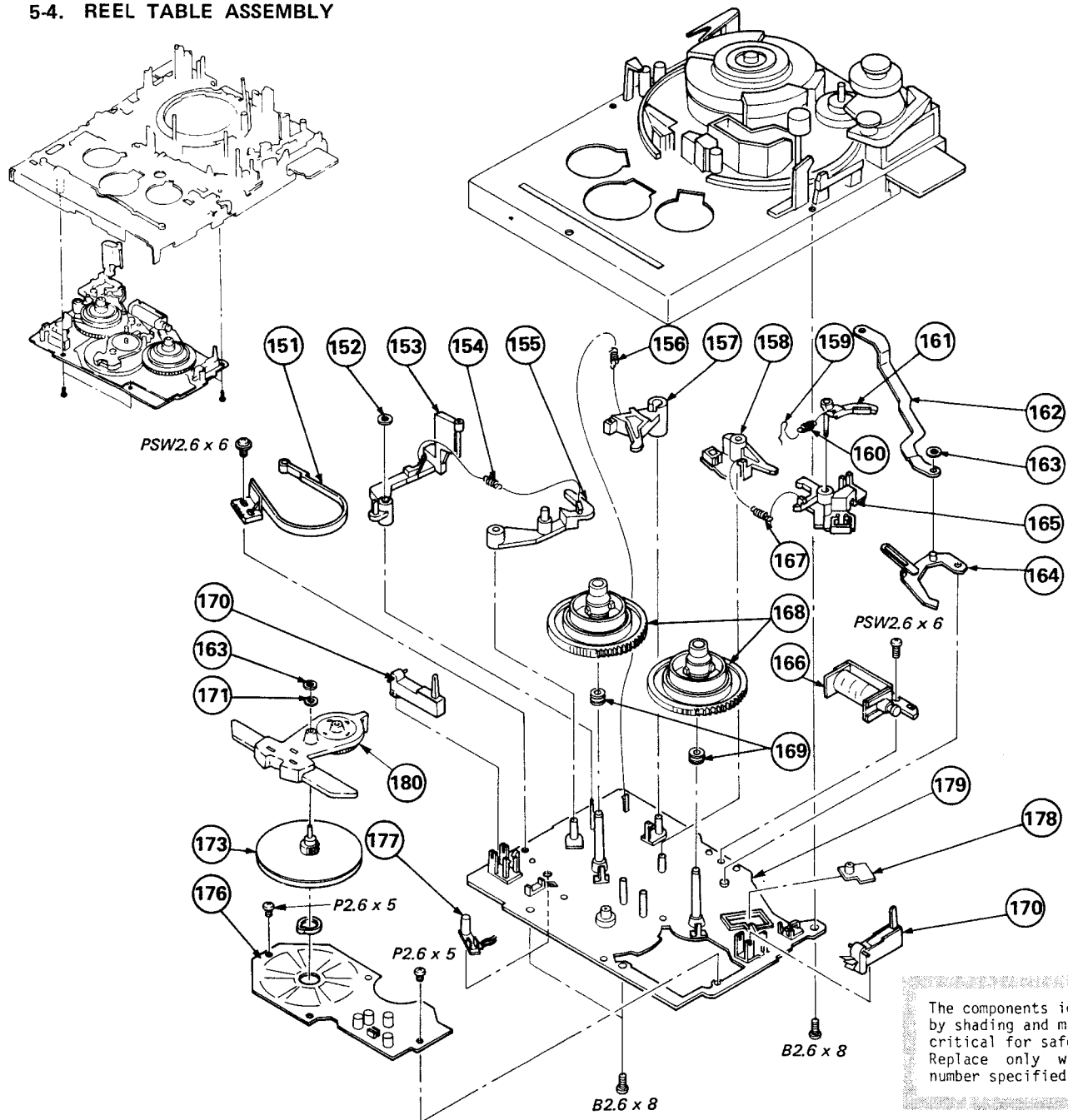
—120—

5-3. FRONT LOADING ASSEMBLY



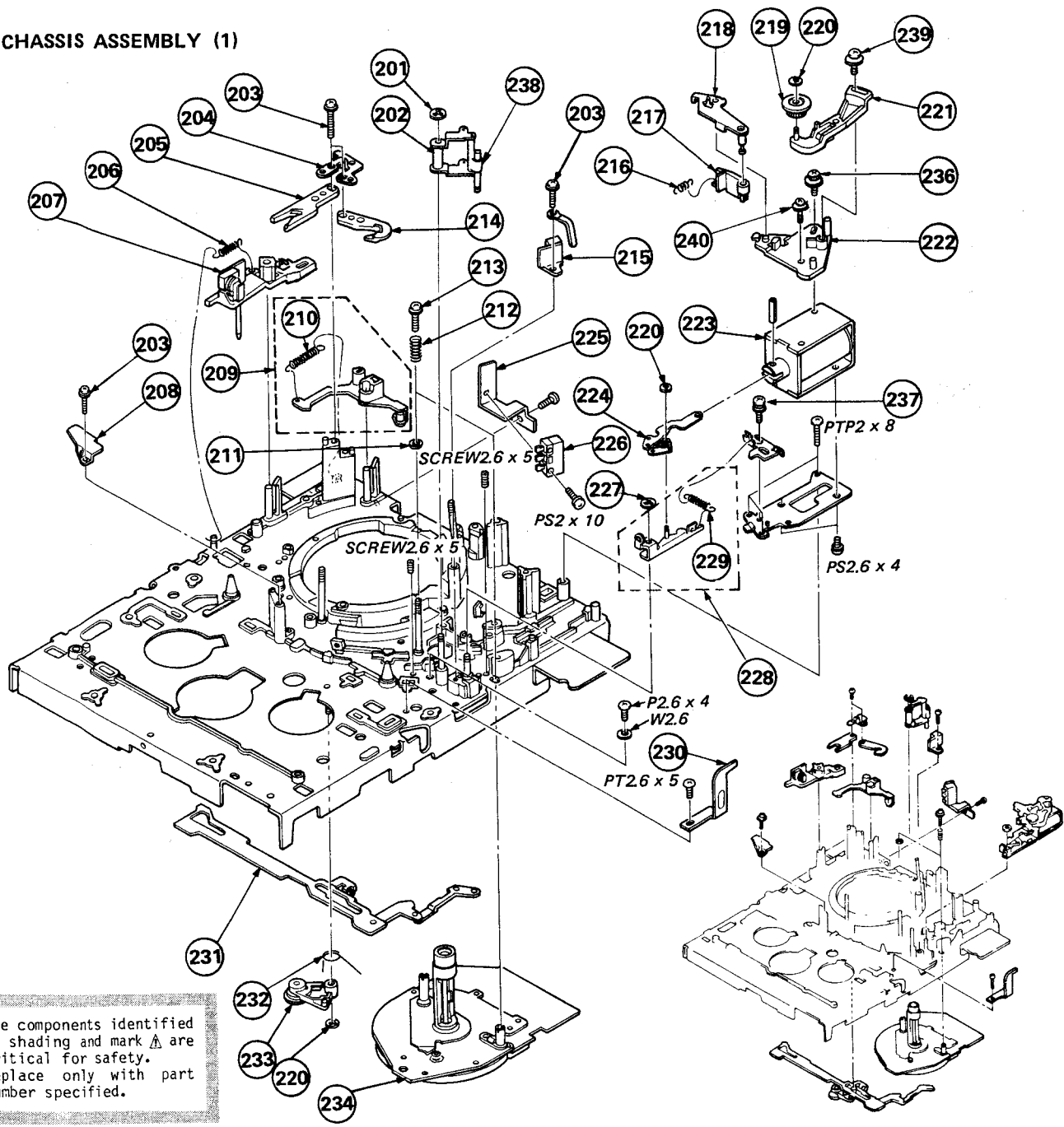
No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
101	3-679-226-00	GEAR (LEFT), ARM, DRIVING		123	3-669-480-21	+ PTPWH 2	
102	3-679-145-00	SPRING (LEFT)		124	3-679-219-00	ARM (RIGHT), DRIVING	
103	3-679-220-00	ARM (LEFT), DRIVING		125	3-679-216-00	WHEEL, WORM	
104	X-3679-105-0	SHAFT ASSY, GEAR, MIDWAY		126	3-679-316-00	ROLLER (LEFT), DRIVING	
105	3-679-222-05	DOOR, UPPER		127	3-679-129-00	LEVER (RIGHT), RETAINER, CASSETTE	
106	3-679-223-05	DOOR, LOWER		128	▲:X-3679-106-0	PLATE ASSY, SIDE, BASE RIGHT	
107	3-679-137-00	HOLDER, OUTER DOOR		129	3-679-131-00	LEVER (RIGHT), PREVENTION	
108	3-679-143-00	ROLLER		130	3-679-133-00	ARM, LID OPEN	
109	3-679-188-00	SPRING, TENSION		131	3-679-189-00	SPRING, TENSION	
110	3-679-132-00	LEVER (LEFT), PREVENTION		132	3-679-134-00	ARM, SWITCHING, DOOR	
111	3-679-130-00	LEVER (LEFT), RETAINER, CASSETTE		133	3-679-221-03	PLATE, RACK, SWITCHING, DOOR	
112	3-679-288-00	SPRING, TENSION		134	3-679-126-00	GEAR (RIGHT), MIDWAY	
113	3-679-135-00	RUBBER, RETAINER, CASSETTE		135	3-679-218-00	GEAR (B), LIMITER	
114	3-679-128-00	ROLLER (RIGHT), DRIVING		136	3-679-144-00	SPRING (RIGHT)	
115	▲:X-3679-107-0	PLATE ASSY, SIDE, BASE LEFT		137	3-679-225-00	GEAR (RIGHT), ARM, DRIVING	
116	▲:3-679-266-00	PLATE, SIDE, LEFT		138	3-679-125-00	GEAR, DRIVING	
117	▲:3-679-265-00	PLATE, SIDE, RIGHT		139	3-679-138-00	CAM (CASSETTE ON)	
118	3-679-217-04	GEAR (A), LIMITER		140	▲:3-679-214-00	HOLDER, GEAR, WORM	
119	3-679-139-00	SPRING		142	3-669-480-00	+ PTPWH 2	
120	3-679-215-00	GEAR, WORM		144	1-554-374-00	SWITCH, LEVER S901	
121	3-679-123-00	SHAFT, GEAR, WORM		145	▲:3-682-626-00	PLATE, TOP	
122	3-679-124-00	CAM (CASSETTE OFF)		146	3-683-421-01	SCREW (+ PTPWH)(2.6X8)	

5-4. REEL TABLE ASSEMBLY



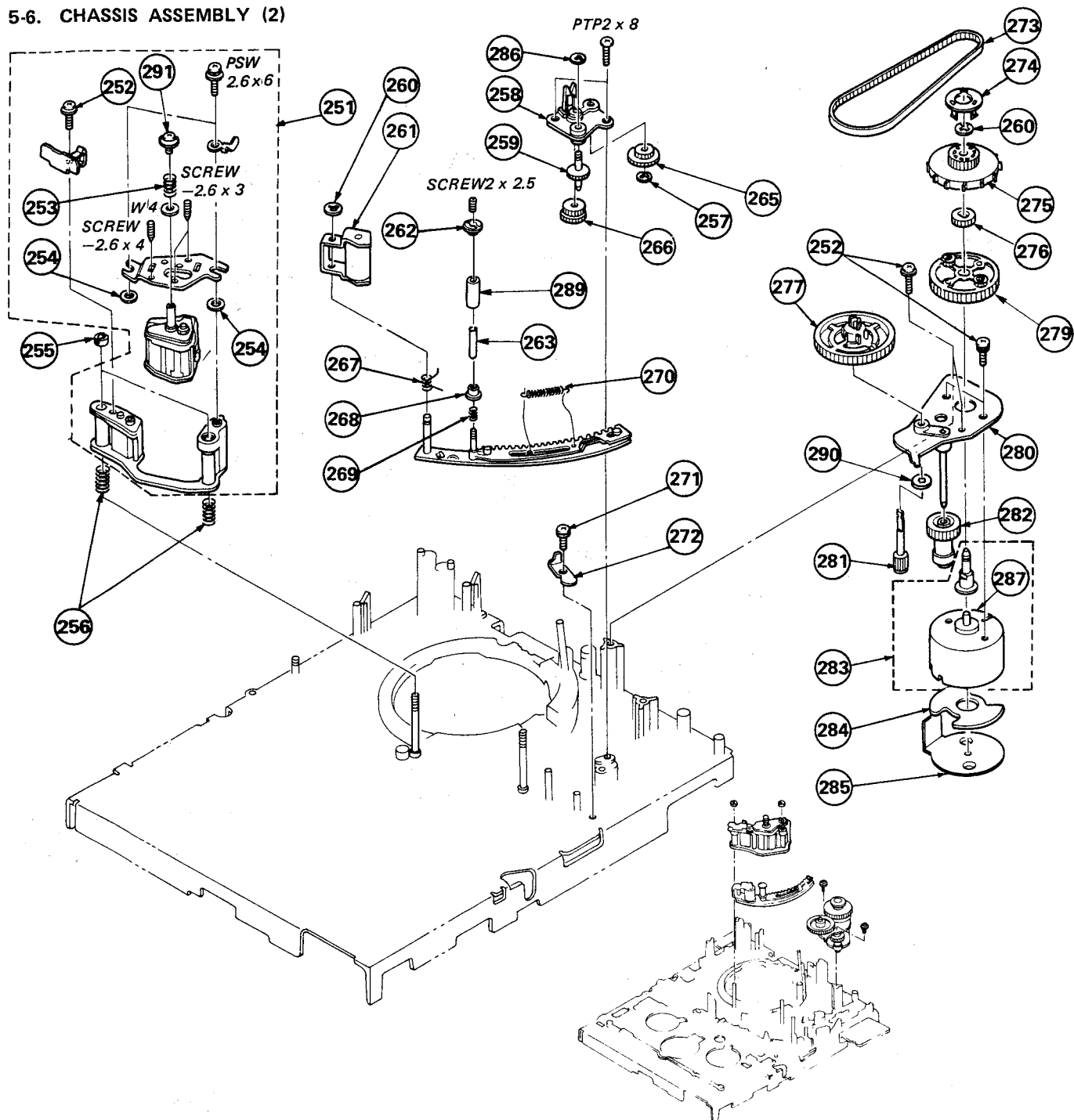
No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
151	X-3679-120-0	BAND ASSY, TENSION REGULATOR		165	X-3679-118-0	BRAKE ASSY, T	
152	3-669-465-00	WASHER (1.5), STOPPER		166	Δ 1-454-348-31	SOLENOID, BRAKE PLUNGER PM901	
153	X-3679-122-0	LEVER ASSY, TENSION REGULATOR		167	3-679-190-00	SPRING, TENSION	
154	3-679-156-00	SPRING, TENSION		168	X-3681-104-0	TABLE ASSY, S REEL	
155	Δ 3-679-230-00	LEVER, FUNCTION		169	3-646-185-00	BEARING	
156	3-679-151-00	SPRING, TENSION		170	1-554-374-00	SWITCH, LEVER S902	
157	Δ 3-679-231-00	LEVER, BRAKE, SOFT		171	3-679-318-00	WASHER, PENDULUM ARM	
158	X-3679-117-0	BRAKE ASSY, S		173	X-2622-201-0	ROTOR ASSY, R	
159	Δ 3-681-163-00	HOOK, SPRING, REWIND		176	Δ A-4910-021-A	R STATOR BOARD, COMPLETE	
160	3-681-156-00	SPRING, TENSION		177	Δ 1-610-401-00	RD-6 BOARD	
161	Δ X-3681-105-0	ARM ASSY, REWIND BRAKE		178	Δ 1-610-402-00	RD-7 BOARD	
162	Δ 3-679-168-00	JOINT, BRAKE, L		179	Δ X-3679-130-0	CHASSIS ASSY, SUB	
163	3-669-595-00	WASHER (2), STOPPER		180	A-6759-074-H	ARM BLOCK ASSY, PENDULM	
164	X-3679-119-0	ARM ASSY, STOPPER, PENDULUM					

5-5. CHASSIS ASSEMBLY (1)



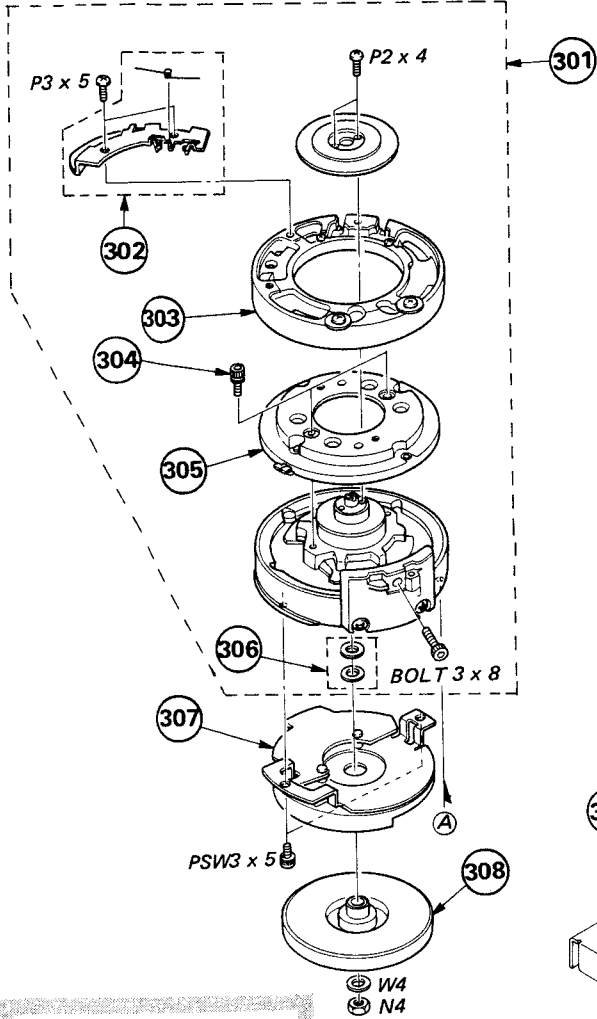
No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
201	3-669-596-00	WASHER (2.3), STOPPER		221	Δ :X-3679-145-0	ARM ASSY, CAR, TENSION	
202	Δ :X-3679-108-0	ARM ASSY, PRESS, PINCH		222	Δ :3-679-117-00	CHASSIS, ARM, STOPPER	
203	3-669-480-11	+ PTPWH 2		223	Δ :1-454-349-00	SOLENOID, PLUNGER PM902	
204	Δ :3-672-540-00	PLATE, GROUND, TAPE GUIDE		224	X-3679-152-0	ARM (B) ASSY, PINCH SOLENOID	
205	Δ :3-669-618-00	PLATE (2), ADJUST		225	Δ :3-672-542-00	BRACKET, SWITCH, LE	
206	3-679-164-00	SPRING, TENSION		226	1-553-539-00	SWITCH, MICRO S903	
207	1-464-286-00	SENSOR, S COIL L901		227	3-669-595-00	WASHER (2), STOPPER	
208	Δ :3-669-476-04	PLATE, GUIDE		228	Δ :X-3669-379-0	ARM (P) ASSY, PINCH LIMITER	
209	X-3679-149-0	ARM (B) ASSY, LOCK		229	3-515-170-00	SPRING, TENSION	
210	3-679-323-00	SPRING, TENSION		230	Δ :3-679-163-00	PLATE, LID OPEN	
212	3-679-359-00	SPRING, COMPRESSION		231	X-3681-106-0	LEVER ASSY, SLIDE	
213	3-669-633-00	SCREW, + PW2		232	3-681-154-00	SPRING, TORSION	
214	Δ :3-672-507-00	PLATE (3-1), ADJUSTMENT		233	X-3681-107-0	ARM ASSY, REVIEW BRAKE	
215	1-464-250-00	SENSOR, T COIL L902		234	8-838-048-01	MOTOR, DC (BHF-1908A)	
216	3-508-108-XX	SPRING, TENSION		236	3-669-607-00	+PSW (SMALL ROUND) 2.6	
217	Δ :3-679-251-00	LIMITER, STOPPER		237	3-669-607-31	+PSW (SMALL ROUND) (2.6)	
218	Δ :X-3679-123-0	ARM ASSY, STOPPER		238	Δ :X-3679-110-0	LINK ASSY, JOINT, PRESS ARM	
219	3-679-307-00	GEAR, TENSION		239	3-681-231-00	(+PW 2.6X8), TAPPING	
220	3-701-436-11	WASHER, 1.6		240	3-681-284-01	SCREW (-2.6X5) (S)	

5-6. CHASSIS ASSEMBLY (2)

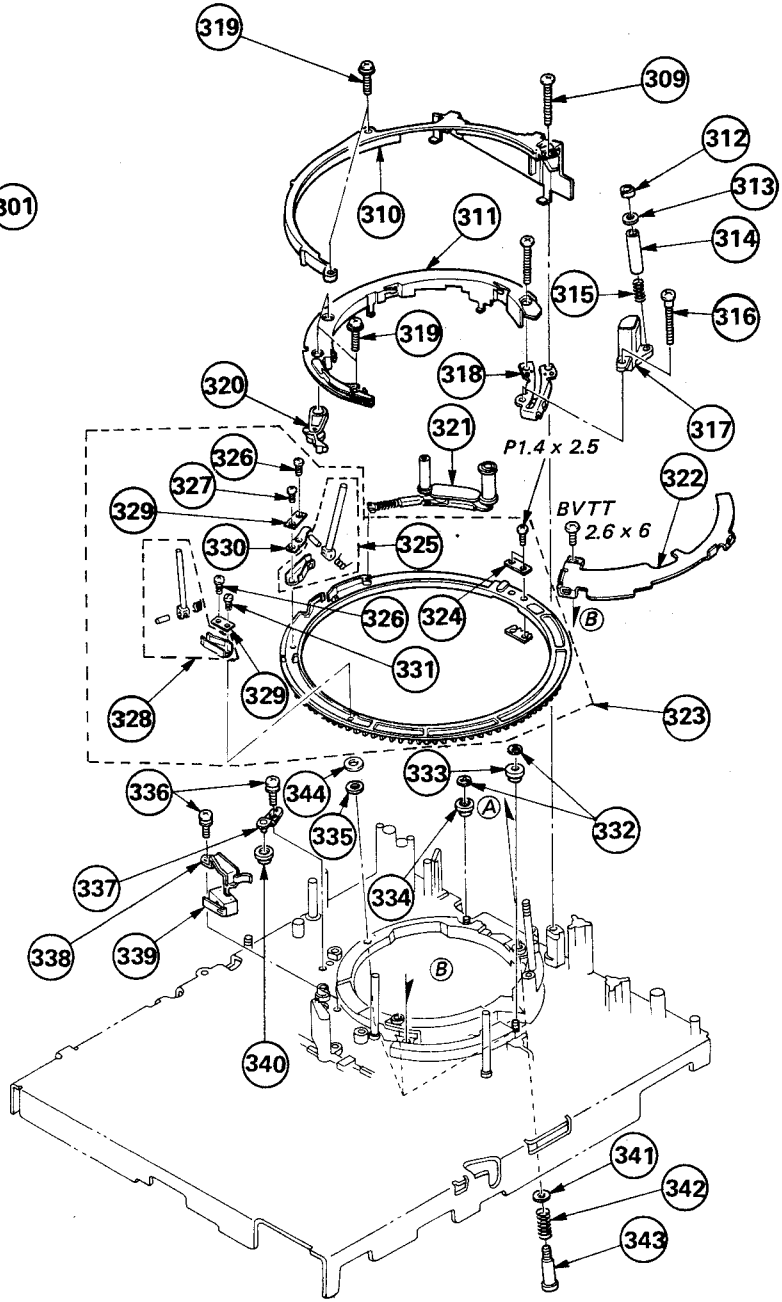


No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
251	A-6761-063-A	ACE ASSY	252,253,254,291	271	3-669-607-31	+PSW (SMALL ROUND) (2.6)	
252	3-669-480-11	+ PTPWH 2		272	3-679-165-00	STOPPER, SLIDER	
253	3-669-316-00	SPRING, COMPRESSION		273	3-679-119-00	BELT, SYNCHRO	
254	3-669-598-00	WASHER, CTL		274	3-679-140-00	FLANGE, GEAR, INTERNAL	
255	3-669-318-00	NUT, ADJUSTMENT, GUIDE		275	3-679-101-00	GEAR, INTERNAL	
256	3-669-317-00	SPRING, COMPRESSION		276	3-679-104-00	GEAR	
257	3-669-465-00	WASHER (1.5), STOPPER		277	3-679-115-00	GEAR (LARGE), LOADING	
258	X-3679-147-0	CHASSIS (B) ASSY, DRIVE GEAR		279	X-3679-111-0	CARRIER ASSY	
259	X-3679-148-0	GEAR (F) ASSY (B)		280	3-679-112-0	CHASSIS ASSY, GEAR, PLANET	
260	3-669-596-00	WASHER (2.3), STOPPER		281	3-679-114-00	GEAR (SMALL), LOADING	
261	X-3669-307-6	ARM ASSY, PINCH ROLLER		282	X-3669-321-0	GEAR (C) ASSY	
262	3-676-650-00	FLANGE (UPPER) (#9), GUIDE		283	A-6737-118-A	MOTOR ASSY, L	287
263	3-672-559-00	SLEEVE, GUIDE		284	3-669-071-00	LM-8 BOARD	
265	3-669-337-00	GEAR (D)		285	3-669-613-00	INSULATOR, L MOTOR	
266	3-669-338-00	GEAR (E)		286	3-669-595-00	WASHER (2), STOPPER	
267	3-669-444-00	SPRING, TORSION		287	1-541-163-00	MOTOR M901	
268	3-672-558-00	FLANGE (LOWER) (#9), GUIDE		289	3-676-649-00	ROLLER (#9), GUIDE	
269	3-669-452-00	SPRING, COMPRESSION		290	3-701-439-11	WASHER	
270	3-549-014-00	SPRING, TENSION		291	3-679-362-00	SCREW (M2X4), PAN	

5-7. DRUM AND S LOADING ASSEMBLIES



The components identified by shading and mark A are critical for safety. Replace only with part number specified.



No.	Part No.	Description
301	A-6050-212-A	DRUM ASSY (DSH-21B-R)
302	A-6760-066-B	SPRING ASSY, TAPE RETAINER
303	A-6760-119-A	DRUM ASSY, UPPER
304	3-669-157-00	BOLT (WASHER) (2.6X8)
305	A-6762-088-B	DISK ASSY (DSR-21-R)
306	X-3669-105-0	SPACE BLOCK ASSY
307	X-2621-204-2	STATOR ASSY, D
308	X-2621-202-0	ROTOR ASSY, D
309	3-669-466-00	SCREW (M 2.6)
310	▲:3-669-585-00	GUIDE (2), SHUTTLE
311	▲:3-679-290-00	GUIDE (1-YA), SHUTTLE
312	3-669-446-00	NUT, GUIDE, NO. 6
313	3-679-910-00	FLANGE (S), GUIDE, NUMBER 6
314	3-669-445-00	SPACER, GUIDE, NO. 6
315	3-669-615-00	SPRING, COMPRESSION
316	3-669-606-00	SCREW (2.6)
317	8-825-508-10	HEAD, FE
318	▲:X-3669-313-0	BASE ASSY, SLANT
319	3-669-480-11	+ PTPWH 2
320	X-3669-327-0	ARM ASSY, SWITCH, ULE
321	A-6750-158-A	SHUTTLE (2) BLOCK ASSY
322	▲:3-669-477-00	LINER, LINK, PIN

Remark	No.	Part No.	Description	Remark
302-306	323	X-3679-150-0	RING (YA) ASSY, S LOADING	324-331
	324	▲:3-669-616-00	RETAINER	
	325	▲:X-3669-430-0	HOLDER BLOCK ASSY, #3 GUIDE	
	326	3-669-478-00	SCREW (1X3), TAPPING	
	327	3-669-479-11	SCREW (1.4X3.5), TAPPING	
	328	▲:X-3669-429-0	HOLDER BLOCK ASSY, #2 GUIDE	
	329	▲:3-669-472-02	RETAINER, SPRING, LEAF	
	330	3-672-583-00	SPRING	
	331	3-672-586-00	SCREW (1.4X3), TAPPING	
	332	3-669-465-00	WASHER (1.5), STOPPER	
	333	3-669-597-00	ROLLER (B), RING	
	334	3-669-630-00	ROLLER (C), RING	
	335	▲:3-669-646-11	SPACER, DRUM	
	336	3-669-607-31	+PSW (SMALL ROUND) (2.6)	
	337	▲:X-3669-329-0	PLATE ASSY, ADJUSTMENT	
	338	▲:3-669-355-00	HOLDER, SWITCH, ULE	
	339	1-553-718-00	SWITCH, MICRO S904	
	340	3-669-360-00	ROLLER, RING	
	341	3-669-600-11	WASHER, FLAT (3.5)	
	342	3-429-123-00	SPRING	
	343	3-669-302-00	SCREW, FITTING	
	344	▲:3-669-646-00	SPACER, DRUM	

5.8. HARDWARE LIST

SCREW

7-621-759-35 +PSW, 2.6X5
7-621-759-45 +PSW, 2.6X6
7-685-534-19 SCREW +BTP 2.6X8 TYPE2 N-S
7-685-648-71 SCREW +BVTP 3X12 TYPE2 IT-3
7-685-648-81 SCREW +BVTP 3X12 TYPE2

7-685-645-81 SCREW +BVTP 3X6 TYPE2
7-685-646-71 SCREW +BVTP 3X8 TYPE2 IT-3
7-685-861-09 SCREW +BVTT 2.6X5 (S)
7-685-862-01 SCREW +BVTT 2.6X6 (S)
7-685-234-19 SCREW +KTP 2.6X8 TYPE2NON-SLIT

7-685-135-11 SCREW +P 2.6X10 TYPE2 NON-SLIT
7-621-259-32 SCREW +P 2.6X5
7-621-259-35 SCREW +P 2.6X5
7-621-259-45 SCREW +P 2.6X6
7-685-134-11 SCREW +P 2.6X8 TYPE2 NON-SLIT

7-621-255-32 SCREW +P 2X4
7-628-253-45 SCREW +PS 2X10
7-628-253-95 SCREW +PS 2.6X4
7-685-791-01 SCREW +PTT 2.6X5 (S)
7-627-551-08 SCREW, PRECISION +P 1.4X1.6

7-627-551-28 SCREW, PRECISION +P 1.4X2.5

SET-SCREW

7-621-712-26 SET-SCREW, SLOT 2.6X3FLAT POINT
7-621-712-35 SET-SCREW, SLOT 2.6X4CONE POINT
7-621-712-46 SET-SCREW, SLOT 2.6X5FLAT POINT

SPRING PIN

7-626-302-31 SPRING PIN, 2.5X14

TAPPING

7-685-105-11 TPG +P 2X8, TYPE 2, NON-SLIT

WASHER

7-688-002-11 W 2.6, MIDDLE
7-688-004-01 W 4, SMALL

NUT

7-622-205-05 N 2, TYPE 2

R_Y-2

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
C086	1-102-522-00	CERAMIC 51PF	5% 50V	C228	1-101-974-00	CERAMIC 20PF	5% 50V
C087	1-102-522-00	CERAMIC 51PF	5% 50V	C229	1-161-013-00	CERAMIC 0.01MF	10% 25V
C088	1-102-511-00	CERAMIC 13PF	5% 50V	C230	1-101-974-00	CERAMIC 20PF	5% 50V
C092	1-102-529-00	CERAMIC 100PF	5% 50V	C231	1-161-025-00	CERAMIC 0.1MF	10% 25V
C093	1-123-332-00	ELECT 47MF	20% 16V	C232	1-161-021-00	CERAMIC 0.047MF	10% 25V
C094	1-101-004-00	CERAMIC 0.01MF	50V	C233	1-123-318-00	ELECT 33MF	20% 16V
C096	1-123-356-00	ELECT 10MF	20% 16V	C234	1-101-004-00	CERAMIC 0.01MF	50V
C097	1-101-005-00	CERAMIC 0.022MF	50V	C235	1-123-380-00	ELECT 1MF	20% 50V
C098	1-123-318-00	ELECT 33MF	20% 16V	C236	1-123-381-00	ELECT 2.2MF	20% 50V
C099	1-123-328-00	ELECT 4.7MF	20% 25V	C237	1-161-013-00	CERAMIC 0.01MF	10% 25V
C100	1-102-519-00	CERAMIC 36PF	5% 50V	C238	1-123-381-00	ELECT 2.2MF	20% 50V
C101	1-102-529-00	CERAMIC 100PF	5% 50V	C239	1-102-973-00	CERAMIC 100PF	5% 50V
C103	1-102-508-00	CERAMIC 10PF	0.5PF 50V	C240	1-102-511-00	CERAMIC 13PF	5% 50V
C105	1-101-005-00	CERAMIC 0.022MF	50V	C241	1-123-330-00	ELECT 22MF	20% 16V
C106	1-123-328-00	ELECT 4.7MF	20% 25V	<u>CONNECTOR</u>			
C107	1-102-976-00	CERAMIC 180PF	5% 50V	CN001	1-560-464-00	PIN, CONNECTOR 10P	
C108	1-102-823-00	CERAMIC 430PF	5% 50V	CN002	1-564-031-00	PIN, CONNECTOR 6P	
C109	1-102-821-00	CERAMIC 360PF	5% 50V	CN003	1-564-028-00	PIN, CONNECTOR 3P	
C111	1-102-851-00	CERAMIC 15PF	5% 50V	<u>DIODE</u>			
C113	1-101-059-00	CERAMIC 510PF	5% 50V	D001	8-719-911-19	DIODE 1SS119	
C115	1-123-328-00	ELECT 4.7MF	20% 25V	D002	=>8-719-911-19	DIODE 1SS119	
C117	1-101-006-00	CERAMIC 0.047MF	50V	D003	=>8-719-911-19	DIODE 1SS119	
C118	1-102-953-00	CERAMIC 18PF	5% 50V	D004	8-719-911-19	DIODE 1SS119	
C119	1-102-807-00	CERAMIC 5PF	1PF 50V	D005	8-719-000-12	DIODE MC931	
C122	1-101-006-00	CERAMIC 0.047MF	50V	D007	8-719-911-19	DIODE 1SS119	
C123	1-102-513-00	CERAMIC 18PF	5% 50V	D008	8-719-911-19	DIODE 1SS119	
C201	1-102-964-00	CERAMIC 36PF	5% 50V	D010	=>8-719-911-19	DIODE 1SS119	
C203	1-161-019-00	CERAMIC 0.033MF	10% 25V	D011	=>8-719-911-19	DIODE 1SS119	
C204	1-161-019-00	CERAMIC 0.033MF	10% 25V	D201	8-719-000-12	DIODE MC931	
C205	1-161-019-00	CERAMIC 0.033MF	10% 25V	D202	8-719-911-19	DIODE 1SS119	
C206	1-161-013-00	CERAMIC 0.01MF	10% 25V	<u>DELAY LINE</u>			
C207	1-102-951-00	CERAMIC 15PF	5% 50V	DL001	1-415-312-00	DELAY LINE (1H)	
C208	1-102-959-00	CERAMIC 22PF	5% 50V	<u>IC</u>			
C209	1-102-951-00	CERAMIC 15PF	5% 50V	IC001	8-758-620-00	IC CX862	
C210	1-102-959-00	CERAMIC 22PF	5% 50V	IC002	=>8-759-908-63	IC CX863	
C211	1-102-959-00	CERAMIC 22PF	5% 50V	IC003	8-759-608-64	IC CX864	
C212	1-102-951-00	CERAMIC 15PF	5% 50V	IC004	8-751-350-00	IC CX135	
C213	1-161-013-00	CERAMIC 0.01MF	10% 25V	IC005	8-759-200-60	IC TA7060AP	
C214	1-123-381-00	ELECT 2.2MF	20% 50V	<u>COIL</u>			
C215	1-123-381-00	ELECT 2.2MF	20% 50V	L001	1-408-623-00	MICRO INDUCTOR 470UH	
C216	1-161-025-00	CERAMIC 0.1MF	10% 25V	L002	1-408-878-00	MICRO INDUCTOR 0.33UH	
C217	1-161-013-00	CERAMIC 0.01MF	10% 25V	L003	1-408-878-00	MICRO INDUCTOR 0.33UH	
C218	1-161-013-00	CERAMIC 0.01MF	10% 25V	L004	1-408-615-00	MICRO INDUCTOR 100UH	
C219	1-102-821-00	CERAMIC 360PF	5% 50V	L005	1-408-618-00	MICRO INDUCTOR 180UH	
C220	1-161-013-00	CERAMIC 0.01MF	10% 25V	L006	1-408-618-00	MICRO INDUCTOR 180UH	
C221	1-101-890-00	CERAMIC 75PF	5% 50V	L014	1-408-604-00	MICRO INDUCTOR 12UH	
C222	1-123-356-00	ELECT 10MF	20% 16V	L015	1-408-617-00	MICRO INDUCTOR 150UH	
C223	1-161-013-00	CERAMIC 0.01MF	10% 25V	L017	1-408-617-00	MICRO INDUCTOR 150UH	
C224	1-161-013-00	CERAMIC 0.01MF	10% 25V				
C225	1-161-013-00	CERAMIC 0.01MF	10% 25V				
C226	1-161-013-00	CERAMIC 0.01MF	10% 25V				

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
L018	1-408-609-00	MICRO INDUCTOR 33UH		Q035	8-729-603-50	TRANSISTOR 2SC403SP	
L019	1-408-615-00	MICRO INDUCTOR 100UH		Q036	8-729-603-50	TRANSISTOR 2SC403SP	
L020	1-408-606-00	MICRO INDUCTOR 18UH		Q037	8-729-603-50	TRANSISTOR 2SC403SP	
L021	1-408-606-00	MICRO INDUCTOR 18UH		Q201 =>8-729-245-83	TRANSISTOR 2SC2458		
L022	1-408-616-00	MICRO INDUCTOR 120UH		Q202 =>8-729-245-83	TRANSISTOR 2SC2458		
L023	1-408-618-00	MICRO INDUCTOR 180UH		Q203	8-729-603-50	TRANSISTOR 2SC403SP	
L024	1-408-616-00	MICRO INDUCTOR 120UH		RESISTOR			
L025	1-408-616-00	MICRO INDUCTOR 120UH		R001	1-247-816-00	CARBON 240 5%	1/6W
L026	1-408-618-00	MICRO INDUCTOR 180UH		R002	1-247-783-00	CARBON 10 5%	1/6W
L027	1-408-616-00	MICRO INDUCTOR 120UH		R003	1-247-817-00	CARBON 270 5%	1/6W
L028	1-408-617-00	MICRO INDUCTOR 150UH		R004	1-247-783-00	CARBON 10 5%	1/6W
L029	1-408-610-00	MICRO INDUCTOR 39UH		R005	1-247-863-00	CARBON 22K 5%	1/6W
L030	1-408-610-00	MICRO INDUCTOR 39UH		R006	1-247-855-00	CARBON 10K 5%	1/6W
L031	1-408-615-00	MICRO INDUCTOR 100UH		R007	1-247-852-00	CARBON 7.5K 5%	1/6W
L032	1-408-605-00	MICRO INDUCTOR 15UH		R008	1-247-855-00	CARBON 10K 5%	1/6W
L033	1-408-617-00	MICRO INDUCTOR 150UH		R009	1-247-844-00	CARBON 3.6K 5%	1/6W
L034	1-408-611-00	MICRO INDUCTOR 47UH		R010	1-247-867-00	CARBON 33K 5%	1/6W
L201	1-408-878-00	MICRO INDUCTOR 0.33UH		R011	1-247-807-00	CARBON 100 5%	1/6W
L202	1-408-608-00	MICRO INDUCTOR 27UH		R012	1-247-855-00	CARBON 10K 5%	1/6W
L203	1-408-608-00	MICRO INDUCTOR 27UH		R013	1-247-855-00	CARBON 10K 5%	1/6W
L204	1-408-609-00	MICRO INDUCTOR 33UH		R014	1-247-831-00	CARBON 1K 5%	1/6W
L205	1-408-610-00	MICRO INDUCTOR 39UH		R015	1-247-827-00	CARBON 680 5%	1/6W
L206	1-408-617-00	MICRO INDUCTOR 150UH		R016	1-247-828-00	CARBON 750 5%	1/6W
L207	1-408-607-00	MICRO INDUCTOR 22UH		R017	1-247-835-00	CARBON 1.5K 5%	1/6W
TRANSISTOR				R018	1-247-837-00	CARBON 1.8K 5%	1/6W
Q001 =>8-729-245-83	TRANSISTOR 2SC2458			R019	1-247-844-00	CARBON 3.6K 5%	1/6W
Q002 =>8-729-204-83	TRANSISTOR 2SA1048-GR			R020	1-247-844-00	CARBON 3.6K 5%	1/6W
Q003 =>8-729-245-83	TRANSISTOR 2SC2458			R021	1-247-831-00	CARBON 1K 5%	1/6W
Q004 =>8-729-245-83	TRANSISTOR 2SC2458			R022	1-247-867-00	CARBON 33K 5%	1/6W
Q005 =>8-729-245-83	TRANSISTOR 2SC2458			R023	1-247-871-00	CARBON 47K 5%	1/6W
Q006 =>8-729-245-83	TRANSISTOR 2SC2458			R024	1-247-847-00	CARBON 4.7K 5%	1/6W
Q008	8-729-384-46	TRANSISTOR 2SA844C		R025	1-247-847-00	CARBON 4.7K 5%	1/6W
Q009	8-729-603-50	TRANSISTOR 2SC403SP		R026	1-247-855-00	CARBON 10K 5%	1/6W
Q010	8-729-603-50	TRANSISTOR 2SC403SP		R027	1-247-847-00	CARBON 4.7K 5%	1/6W
Q011	8-729-384-46	TRANSISTOR 2SA844C		R047	1-247-844-00	CARBON 3.6K 5%	1/6W
Q012	8-729-603-50	TRANSISTOR 2SC403SP		R049	1-247-814-00	CARBON 200 5%	1/6W
Q013	8-729-603-50	TRANSISTOR 2SC403SP		R050	1-247-840-00	CARBON 2.4K 5%	1/6W
Q014	8-729-603-50	TRANSISTOR 2SC403SP		R051	1-247-818-00	CARBON 300 5%	1/6W
Q015	8-729-384-46	TRANSISTOR 2SA844C		R052	1-247-834-00	CARBON 1.3K 5%	1/6W
Q016	8-729-603-50	TRANSISTOR 2SC403SP		R053	1-247-830-00	CARBON 910 5%	1/6W
Q017	8-729-384-46	TRANSISTOR 2SA844C		R054	1-247-835-00	CARBON 1.5K 5%	1/6W
Q018	8-729-603-50	TRANSISTOR 2SC403SP		R055	1-247-855-00	CARBON 10K 5%	1/6W
Q019	8-729-603-50	TRANSISTOR 2SC403SP		R056	1-247-836-00	CARBON 1.6K 5%	1/6W
Q021	8-729-603-50	TRANSISTOR 2SC403SP		R057	1-247-849-00	CARBON 5.6K 5%	1/6W
Q022	8-729-603-50	TRANSISTOR 2SC403SP		R058	1-247-832-00	CARBON 1.1K 5%	1/6W
Q023	8-729-603-50	TRANSISTOR 2SC403SP		R059	1-247-837-00	CARBON 1.8K 5%	1/6W
Q024	8-729-603-50	TRANSISTOR 2SC403SP		R060	1-247-814-00	CARBON 200 5%	1/6W
Q025	8-729-384-46	TRANSISTOR 2SA844C		R061	1-247-839-00	CARBON 2.2K 5%	1/6W
Q028	8-729-384-46	TRANSISTOR 2SA844C		R062	1-247-810-00	CARBON 130 5%	1/6W
Q029	8-729-384-46	TRANSISTOR 2SA844C		R063	1-247-825-00	CARBON 560 5%	1/6W
Q033	8-729-384-46	TRANSISTOR 2SA844C		R064	1-247-839-00	CARBON 2.2K 5%	1/6W
Q034	8-729-603-50	TRANSISTOR 2SC403SP		R065	1-247-842-00	CARBON 3K 5%	1/6W

When indicating parts by reference number, please include the board name.

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R066	1-247-821-00	CARBON	390 5% 1/6W	R140	1-247-831-00	CARBON	1K 5% 1/6W
R067	1-247-863-00	CARBON	22K 5% 1/6W	R141	1-247-831-00	CARBON	1K 5% 1/6W
R068	1-247-863-00	CARBON	22K 5% 1/6W	R150	1-247-874-00	CARBON	62K 5% 1/6W
R069	1-247-819-00	CARBON	330 5% 1/6W	R151	1-247-874-00	CARBON	62K 5% 1/6W
R071	1-247-812-00	CARBON	160 5% 1/6W	R152	1-247-890-00	CARBON	300K 5% 1/6W
R072	1-247-831-00	CARBON	1K 5% 1/6W	R153	1-247-811-00	CARBON	150 5% 1/6W
R073	1-247-855-00	CARBON	10K 5% 1/6W	R154	1-247-834-00	CARBON	1.3K 5% 1/6W
R074	1-247-832-00	CARBON	1.1K 5% 1/6W	R155	1-247-837-00	CARBON	1.8K 5% 1/6W
R075	1-247-832-00	CARBON	1.1K 5% 1/6W	R156	1-247-817-00	CARBON	270 5% 1/6W
R077	1-247-859-00	CARBON	15K 5% 1/6W	R157	1-247-811-00	CARBON	150 5% 1/6W
R078	1-247-855-00	CARBON	10K 5% 1/6W	R158	1-247-829-00	CARBON	820 5% 1/6W
R079	1-247-842-00	CARBON	3K 5% 1/6W	R159	1-247-839-00	CARBON	2.2K 5% 1/6W
R080	1-247-867-00	CARBON	33K 5% 1/6W	R160	1-247-821-00	CARBON	390 5% 1/6W
R081	1-247-824-00	CARBON	510 5% 1/6W	R162	1-247-831-00	CARBON	1K 5% 1/6W
R082	1-247-838-00	CARBON	2K 5% 1/6W	R163	1-247-863-00	CARBON	22K 5% 1/6W
R086	1-247-811-00	CARBON	150 5% 1/6W	R164	1-247-863-00	CARBON	22K 5% 1/6W
R087	1-247-866-00	CARBON	30K 5% 1/6W	R165	1-247-834-00	CARBON	1.3K 5% 1/6W
R088	1-247-844-00	CARBON	3.6K 5% 1/6W	R166	1-247-805-00	CARBON	82 5% 1/6W
R089	1-247-847-00	CARBON	4.7K 5% 1/6W	R167	1-247-834-00	CARBON	1.3K 5% 1/6W
R090	1-247-831-00	CARBON	1K 5% 1/6W	R169	1-247-812-00	CARBON	160 5% 1/6W
R091	1-247-883-00	CARBON	150K 5% 1/6W	R170	1-247-819-00	CARBON	330 5% 1/6W
R092	1-247-867-00	CARBON	33K 5% 1/6W	R171	1-247-831-00	CARBON	1K 5% 1/6W
R093	1-247-869-00	CARBON	39K 5% 1/6W	R172	1-247-855-00	CARBON	10K 5% 1/6W
R094	1-247-837-00	CARBON	1.8K 5% 1/6W	R173	1-247-839-00	CARBON	2.2K 5% 1/6W
R095	1-247-869-00	CARBON	39K 5% 1/6W	R177	1-247-831-00	CARBON	1K 5% 1/6W
R096	1-247-807-00	CARBON	100 5% 1/6W	R179	1-247-857-00	CARBON	12K 5% 1/6W
R099	1-247-849-00	CARBON	5.6K 5% 1/6W	R201	1-247-847-00	CARBON	4.7K 5% 1/6W
R100	1-247-817-00	CARBON	270 5% 1/6W	R203	1-247-835-00	CARBON	1.5K 5% 1/6W
R101	1-247-817-00	CARBON	270 5% 1/6W	R204	1-247-835-00	CARBON	1.5K 5% 1/6W
R102	1-247-861-00	CARBON	18K 5% 1/6W	R205	1-247-835-00	CARBON	1.5K 5% 1/6W
R103	1-247-824-00	CARBON	510 5% 1/6W	R206	1-247-830-00	CARBON	910 5% 1/6W
R104	1-247-883-00	CARBON	150K 5% 1/6W	R207	1-247-846-00	CARBON	4.3K 5% 1/6W
R105	1-247-838-00	CARBON	2K 5% 1/6W	R208	1-247-833-00	CARBON	1.2K 5% 1/6W
R106	1-247-835-00	CARBON	1.5K 5% 1/6W	R209	1-247-836-00	CARBON	1.6K 5% 1/6W
R108	1-247-837-00	CARBON	1.8K 5% 1/6W	R210	1-247-835-00	CARBON	1.5K 5% 1/6W
R109	1-247-837-00	CARBON	1.8K 5% 1/6W	R211	1-247-863-00	CARBON	22K 5% 1/6W
R110	1-247-849-00	CARBON	5.6K 5% 1/6W	R212	1-247-815-00	CARBON	220 5% 1/6W
R111	1-247-879-00	CARBON	100K 5% 1/6W	R213	1-247-855-00	CARBON	10K 5% 1/6W
R112	1-247-827-00	CARBON	680 5% 1/6W	R214	1-247-871-00	CARBON	47K 5% 1/6W
R113	1-247-831-00	CARBON	1K 5% 1/6W	R215	1-247-847-00	CARBON	4.7K 5% 1/6W
R115	1-247-833-00	CARBON	1.2K 5% 1/6W	R216	1-247-847-00	CARBON	4.7K 5% 1/6W
R116	1-247-826-00	CARBON	620 5% 1/6W	R217	1-247-847-00	CARBON	4.7K 5% 1/6W
R117	1-247-826-00	CARBON	620 5% 1/6W	R218	1-247-829-00	CARBON	820 5% 1/6W
R118	1-247-837-00	CARBON	1.8K 5% 1/6W	R219	1-247-823-00	CARBON	470 5% 1/6W
R119	1-247-837-00	CARBON	1.8K 5% 1/6W	R220	1-247-829-00	CARBON	820 5% 1/6W
R122	1-247-823-00	CARBON	470 5% 1/6W	R221	1-247-831-00	CARBON	1K 5% 1/6W
R123	1-247-824-00	CARBON	510 5% 1/6W	R222	1-247-863-00	CARBON	22K 5% 1/6W
R126	1-247-845-00	CARBON	3.9K 5% 1/6W	R223	1-247-867-00	CARBON	33K 5% 1/6W
R134	1-247-869-00	CARBON	39K 5% 1/6W	R224	1-247-839-00	CARBON	2.2K 5% 1/6W
R135	1-247-866-00	CARBON	30K 5% 1/6W	R225	1-247-879-00	CARBON	100K 5% 1/6W
R136	1-247-831-00	CARBON	1K 5% 1/6W	R226	1-247-851-00	CARBON	6.8K 5% 1/6W
R137	1-247-831-00	CARBON	1K 5% 1/6W	R227	1-247-867-00	CARBON	33K 5% 1/6W
R138	1-247-835-00	CARBON	1.5K 5% 1/6W				
R139	1-247-831-00	CARBON	1K 5% 1/6W				

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
<u>VARIABLE RESISTOR</u>				C032	1-101-004-00	CERAMIC 0.01MF	50V
RV001	1-228-745-00	RES, ADJ, CARBON 1K		C033	1-101-005-00	CERAMIC 0.022MF	50V
RV005	1-228-746-00	RES, ADJ, CARBON 2.2K		C034	1-102-113-00	CERAMIC 390PF	10% 50V
RV006	1-228-753-00	RES, ADJ, CARBON 470K		C035	1-101-004-00	CERAMIC 0.01MF	50V
RV007	1-228-745-00	RES, ADJ, CARBON 1K		C036	1-161-021-00	CERAMIC 0.047MF	10% 25V
RV008	1-228-748-00	RES, ADJ, CARBON 10K		C037	1-123-318-00	ELECT 33MF	20% 16V
RV009	1-228-750-00	RES, ADJ, CARBON 47K		C039	1-101-004-00	CERAMIC 0.01MF	50V
RV010	1-228-750-00	RES, ADJ, CARBON 47K		C041	1-101-004-00	CERAMIC 0.01MF	50V
RV011	1-228-994-00	RES, ADJ, METAL GLAZE 10K		C043	1-102-508-00	CERAMIC 10PF	0.5PF 50V
RV012	1-228-991-00	RES, ADJ, METAL GLAZE 2.2K		C044	1-161-025-00	CERAMIC 0.1MF	10% 25V
RV013	1-228-745-00	RES, ADJ, CARBON 1K		C045	1-161-025-00	CERAMIC 0.1MF	10% 25V
RV014	1-228-747-00	RES, ADJ, CARBON 4.7K		C046	1-123-354-00	ELECT 3.3MF	20% 50V
RV201	1-228-746-00	RES, ADJ, CARBON 2.2K		C047	1-101-005-00	CERAMIC 0.022MF	50V
RV202	1-228-746-00	RES, ADJ, CARBON 2.2K		C048	1-101-004-00	CERAMIC 0.01MF	50V
RV203	1-228-746-00	RES, ADJ, CARBON 2.2K		C049	1-101-004-00	CERAMIC 0.01MF	50V
RV204	1-228-746-00	RES, ADJ, CARBON 2.2K		C050	1-101-004-00	CERAMIC 0.01MF	50V
RV205	1-228-746-00	RES, ADJ, CARBON 2.2K		C051	1-123-306-00	ELECT 47MF	20% 10V
*****				C052	1-101-001-00	CERAMIC 0.001MF	50V
A: A-6710-465-A YC-26 BOARD, COMPLETE				C053	1-101-006-00	CERAMIC 0.047MF	50V
*****				C054	1-123-333-00	ELECT 100MF	20% 16V
1-536-796-00 TERMINAL BOARD, CONTROL PANEL				C055	1-123-318-00	ELECT 33MF	20% 16V
<u>FILTER</u>				C056	1-101-001-00	CERAMIC 0.001MF	50V
BPF001	1-235-098-00	FILTER, BAND PASS		C057	1-131-341-00	ELECT(SOLID) 0.1MF	10% 25V
<u>COIL</u>				C058	1-101-005-00	CERAMIC 0.022MF	50V
C001	1-102-953-00	CERAMIC 18PF	5% 50V	C059	1-123-356-00	ELECT 10MF	20% 16V
C002	1-101-004-00	CERAMIC 0.01MF	50V	C060	1-123-330-00	ELECT 22MF	20% 16V
C003	1-102-525-00	CERAMIC 68PF	5% 50V	C061	1-102-512-00	CERAMIC 16PF	5% 50V
C004	1-102-525-00	CERAMIC 68PF	5% 50V	C062	1-101-005-00	CERAMIC 0.022MF	50V
C005	1-102-110-00	CERAMIC 220PF	10% 50V	C064	1-101-001-00	CERAMIC 0.001MF	50V
C006	1-101-004-00	CERAMIC 0.01MF	50V	C070	1-161-021-00	CERAMIC 0.047MF	10% 25V
C007	1-161-021-00	CERAMIC 0.047MF	10% 25V	C071	1-101-004-00	CERAMIC 0.01MF	50V
C008	1-123-356-00	ELECT 10MF	20% 16V	C072	1-101-005-00	CERAMIC 0.022MF	50V
C009	1-123-356-00	ELECT 10MF	20% 25V	C073	1-101-004-00	CERAMIC 0.01MF	50V
C010	1-123-356-00	ELECT 10MF	20% 25V	C074	1-101-004-00	CERAMIC 0.01MF	50V
C011	1-123-379-00	ELECT 0.47MF	20% 50V	C075	1-101-004-00	CERAMIC 0.01MF	50V
C012	1-123-379-00	ELECT 0.47MF	20% 50V	C076	1-101-004-00	CERAMIC 0.01MF	50V
C013	1-108-603-00	MYLAR 0.1MF	5% 50V	C077	1-101-006-00	CERAMIC 0.047MF	50V
C014	1-123-354-00	ELECT 3.3MF	20% 50V	C078	1-123-318-00	ELECT 33MF	20% 16V
C015	1-101-004-00	CERAMIC 0.01MF	50V	C079	1-101-004-00	CERAMIC 0.01MF	50V
C016	1-101-974-00	CERAMIC 20PF	5% 50V	C080	1-102-947-00	CERAMIC 10PF	5% 50V
C017	1-101-006-00	CERAMIC 0.047MF	50V	C081	1-102-529-00	CERAMIC 100PF	5% 50V
C018	1-101-006-00	CERAMIC 0.047MF	50V	C082	1-101-004-00	CERAMIC 0.01MF	50V
C019	1-101-004-00	CERAMIC 0.01MF	50V	C083	1-101-004-00	CERAMIC 0.01MF	50V
C020	1-101-004-00	CERAMIC 0.01MF	50V	C084	1-101-004-00	CERAMIC 0.01MF	50V
C021	1-101-003-00	CERAMIC 0.0047MF	50V	C085	1-101-004-00	CERAMIC 0.01MF	50V
C022	1-123-380-00	ELECT 1MF	20% 50V	C086	1-102-979-00	CERAMIC 240PF	5% 50V
C023	1-101-004-00	CERAMIC 0.01MF	50V	C087	1-101-006-00	CERAMIC 0.047MF	50V
C031	1-101-004-00	CERAMIC 0.01MF	50V	C088	1-101-006-00	CERAMIC 0.047MF	50V
				C089	1-102-947-00	CERAMIC 10PF	5% 50V
				C090	1-102-947-00	CERAMIC 10PF	5% 50V
				C092	1-101-004-00	CERAMIC 0.01MF	50V
				C093	1-101-004-00	CERAMIC 0.01MF	50V
				C094	1-102-129-00	CERAMIC 0.01MF	10% 50V

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
C095	1-102-523-00	CERAMIC	56PF 5% 50V	C150	1-123-356-00	ELECT 10MF 20% 16V	
C096	1-102-529-00	CERAMIC	100PF 5% 50V	C155	1-123-310-00	ELECT 470MF 20% 10V	
C097	1-102-529-00	CERAMIC	100PF 5% 50V	C159	1-123-356-00	ELECT 10MF 20% 16V	
C098	1-102-530-00	CERAMIC	120PF 5% 50V	C161	1-123-356-00	ELECT 10MF 20% 16V	
C099	1-101-004-00	CERAMIC	0.01MF 50V	C162	1-161-021-00	CERAMIC 0.047MF 10% 25V	
C100	1-101-006-00	CERAMIC	0.047MF 50V	C163	1-101-004-00	CERAMIC 0.01MF 50V	
C101	1-123-356-00	ELECT	10MF 20% 16V	C164	1-101-006-00	CERAMIC 0.047MF 50V	
C102	1-102-531-00	CERAMIC	150PF 5% 50V	C167	1-161-021-00	CERAMIC 0.047MF 10% 25V	
C103	1-130-471-00	MYLAR	0.001MF 5% 50V	C168	1-123-356-00	ELECT 10MF 20% 16V	
C104	1-130-471-00	MYLAR	0.001MF 5% 50V	C170	1-102-904-00	CERAMIC 110PF 5% 50V	
C105	1-102-947-00	CERAMIC	10PF 5% 50V	C301	1-101-004-00	CERAMIC 0.01MF 50V	
C106	1-123-306-00	ELECT	47MF 20% 10V	C303	1-123-328-00	ELECT 4.7MF 20% 25V	
C107	1-101-880-00	CERAMIC	47PF 5% 50V	C307	1-123-356-00	ELECT 10MF 20% 16V	
C108	1-123-328-00	ELECT	4.7MF 20% 25V	C308	1-161-021-00	CERAMIC 0.047MF 10% 25V	
C109	1-161-025-00	CERAMIC	0.1MF 10% 25V	C309	1-161-021-00	CERAMIC 0.047MF 10% 25V	
C110	1-102-973-00	CERAMIC	100PF 5% 50V	C310	1-161-021-00	CERAMIC 0.047MF 10% 25V	
C111	1-161-025-00	CERAMIC	0.1MF 10% 25V	C311	1-161-021-00	CERAMIC 0.047MF 10% 25V	
C112	1-130-491-00	MYLAR	0.047MF 5% 50V	C314	1-102-978-00	CERAMIC 220PF 5% 50V	
C113	1-101-059-00	CERAMIC	510PF 5% 50V	C315	1-161-025-00	CERAMIC 0.1MF 10% 25V	
C114	1-102-114-00	CERAMIC	470PF 10% 50V	C316	1-101-004-00	CERAMIC 0.01MF 50V	
C115	1-102-977-00	CERAMIC	200PF 5% 50V	C317	1-102-520-00	CERAMIC 39PF 5% 50V	
C116	1-102-114-00	CERAMIC	470PF 10% 50V	C350	1-101-003-00	CERAMIC 0.0047MF 50V	
C117	1-123-328-00	ELECT	4.7MF 20% 25V	C351	1-101-003-00	CERAMIC 0.0047MF 50V	
C118	1-123-356-00	ELECT	10MF 20% 16V	C352	1-130-474-00	MYLAR 0.0018MF 5% 50V	
C119	1-123-356-00	ELECT	10MF 20% 16V	C353	1-101-004-00	CERAMIC 0.01MF 50V	
C120	1-123-318-00	ELECT	33MF 20% 16V	C354	1-123-356-00	ELECT 10MF 20% 16V	
C121	1-123-318-00	ELECT	33MF 20% 16V	C355	1-123-310-00	ELECT 470MF 20% 10V	
C122	1-123-328-00	ELECT	4.7MF 20% 25V				
C123	1-123-328-00	ELECT	4.7MF 20% 25V				
C124	1-101-004-00	CERAMIC	0.01MF 50V				
C125	1-101-006-00	CERAMIC	0.047MF 50V				
C126	1-101-884-00	CERAMIC	56PF 5% 50V				
C127	1-101-006-00	CERAMIC	0.047MF 50V				
C128	1-101-006-00	CERAMIC	0.047MF 50V				
C129	1-102-963-00	CERAMIC	33PF 5% 50V				
C130	1-101-004-00	CERAMIC	0.01MF 50V				
C131	1-101-006-00	CERAMIC	0.047MF 50V				
C132	1-101-884-00	CERAMIC	56PF 5% 50V				
C133	1-102-937-00	CERAMIC	4PF 0.25PF 50V				
C134	1-101-004-00	CERAMIC	0.01MF 50V				
C135	1-101-004-00	CERAMIC	0.01MF 50V				
C136	1-123-380-00	ELECT	1MF 20% 50V				
C137	1-130-475-00	MYLAR	0.0022MF 5% 50V				
C138	1-123-356-00	ELECT	10MF 20% 16V				
C139	1-123-332-00	ELECT	47MF 20% 16V				
C140	1-101-006-00	CERAMIC	0.047MF 50V				
C141	1-123-318-00	ELECT	33MF 20% 16V				
C142	1-101-005-00	CERAMIC	0.022MF 50V				
C143	1-123-333-00	ELECT	100MF 20% 16V				
C144	1-101-004-00	CERAMIC	0.01MF 50V				
C145	1-161-025-00	CERAMIC	0.1MF 10% 25V				
C147	1-123-330-00	ELECT	22MF 20% 16V				
C148	1-123-356-00	ELECT	10MF 20% 25V				

FILTER

CF001	1-527-874-00	FILTER, CERAMIC
CF002	1-527-875-00	FILTER, CERAMIC

CONNECTOR

CN001	1-564-033-00	PIN, CONNECTOR 8P
CN002	1-564-032-00	PIN, CONNECTOR 7P
CN003	1-560-891-00	PIN, CONNECTOR 3P
CN005	1-560-894-00	PIN, CONNECTOR 6P
CN006	1-560-892-00	PIN, CONNECTOR 4P
CN007	1-560-895-00	PIN, CONNECTOR 7P
CN008	1-560-898-00	PIN, CONNECTOR 10P
CN009	1-507-840-00	JACK, MINIATURE

TRIMMER

CV001	1-141-240-00	CAP, TRIMMER 20PF
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DIODE

D001	=>8-719-911-19	DIODE 1SS119
D003	8-719-000-12	DIODE MC931
D004	8-719-100-34	DIODE RD5.6E-B1
D005	8-719-000-12	DIODE MC931
D006	=>8-719-911-19	DIODE 1SS119
D008	=>8-719-911-19	DIODE 1SS119

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description
D009	8-719-000-06	DIODE MC921
D013	=>8-719-911-19	DIODE 1SS119
D016	=>8-719-911-19	DIODE 1SS119
D017	=>8-719-911-19	DIODE 1SS119
D018	=>8-719-911-19	DIODE 1SS119
D019	=>8-719-911-19	DIODE 1SS119
D028	8-719-100-56	DIODE RD10E-B1
D031	=>8-719-911-19	DIODE 1SS119
D033	=>8-719-911-19	DIODE 1SS119
D034	=>8-719-911-19	DIODE 1SS119
D035	=>8-719-911-19	DIODE 1SS119

DELAY LINE

DLO01	1-415-282-00	DELAY LINE
DLO02	1-415-313-00	DELAY LINE (1H)

IC

IC001	8-758-691-00	IC CX869A
IC002	8-759-208-94	IC CX894
IC003	8-759-608-82	IC CX882
IC004	8-752-000-80	IC CX20008
IC005	8-757-945-00	IC CX7945
IC006	8-759-600-08	IC CX870A
IC009	8-759-208-94	IC CX894
IC010	8-759-273-20	IC TA7320P
IC011	8-759-240-13	IC TC4013BP
IC012	8-759-240-69	IC TC4069UBP
IC013	8-759-208-67	IC CX867
IC014	8-759-908-68	IC CX868
IC015	8-759-208-94	IC CX894
IC016	8-759-979-26	IC CX7926
IC017	8-759-618-48	IC M51848L

COIL

L001	1-408-420-00	MICRO INDUCTOR 82UH
L002	1-408-427-00	MICRO INDUCTOR 330UH
L003	1-408-429-00	MICRO INDUCTOR 470UH
L004	1-408-408-00	MICRO INDUCTOR 8.2UH
L005	1-408-429-00	MICRO INDUCTOR 470UH
L006	1-407-503-00	MICRO INDUCTOR 8.2MMH
L007	1-408-412-00	MICRO INDUCTOR 18UH
L008	1-408-426-00	MICRO INDUCTOR 270UH
L009	1-408-429-00	MICRO INDUCTOR 470UH
L010	1-407-503-00	MICRO INDUCTOR 8.2MMH
L011	1-408-408-00	MICRO INDUCTOR 8.2UH
L012	1-408-406-00	MICRO INDUCTOR 5.6UH
L013	1-407-496-00	MICRO INDUCTOR 2.2MMH
L014	1-407-500-00	MICRO INDUCTOR 4.7MMH
L015	1-408-415-00	MICRO INDUCTOR 33UH

FILTER

LPF001	1-235-097-00	FILTER, LOW PASS
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When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark
<u>VARIABLE RESISTOR</u>			
LV002	1-408-512-00	COIL (VARIABLE)	
<u>IC LINK</u>			
PS001	1-532-685-00	LINK, IC	
<u>TRANSISTOR</u>			
Q001	=>8-729-245-83	TRANSISTOR 2SC2458	
Q002	=>8-729-245-83	TRANSISTOR 2SC2458	
Q003	=>8-729-245-83	TRANSISTOR 2SC2458	
Q006	8-729-603-50	TRANSISTOR 2SC403SP	
Q007	=>8-729-245-83	TRANSISTOR 2SC2458	
Q008	=>8-729-245-83	TRANSISTOR 2SC2458	
Q009	=>8-729-245-83	TRANSISTOR 2SC2458	
Q013	8-729-603-50	TRANSISTOR 2SC403SP	
Q014	8-729-603-50	TRANSISTOR 2SC403SP	
Q015	8-729-603-50	TRANSISTOR 2SC403SP	
Q017	=>8-729-245-83	TRANSISTOR 2SC2458	
Q019	=>8-729-245-83	TRANSISTOR 2SC2458	
Q020	=>8-729-245-83	TRANSISTOR 2SC2458	
Q021	=>8-729-245-83	TRANSISTOR 2SC2458	
Q024	=>8-729-245-83	TRANSISTOR 2SC2458	
Q025	=>8-729-245-83	TRANSISTOR 2SC2458	
Q026	=>8-729-245-83	TRANSISTOR 2SC2458	
Q027	=>8-729-245-83	TRANSISTOR 2SC2458	
Q028	=>8-729-204-83	TRANSISTOR 2SA1048-GR	
Q029	=>8-729-245-83	TRANSISTOR 2SC2458	
Q030	=>8-729-245-83	TRANSISTOR 2SC2458	
Q031	=>8-729-245-83	TRANSISTOR 2SC2458	
Q033	=>8-729-204-83	TRANSISTOR 2SA1048-GR	
Q034	=>8-729-245-83	TRANSISTOR 2SC2458	
Q035	=>8-729-204-83	TRANSISTOR 2SA1048-GR	
Q036	=>8-729-204-83	TRANSISTOR 2SA1048-GR	
Q037	=>8-729-204-83	TRANSISTOR 2SA1048-GR	
Q038	=>8-729-204-83	TRANSISTOR 2SA1048-GR	
Q039	=>8-729-245-83	TRANSISTOR 2SC2458	
Q040	=>8-729-204-83	TRANSISTOR 2SA1048-GR	
Q041	=>8-729-245-83	TRANSISTOR 2SC2458	
Q042	=>8-729-245-83	TRANSISTOR 2SC2458	
Q043	=>8-729-245-83	TRANSISTOR 2SC2458	
Q044	=>8-729-245-83	TRANSISTOR 2SC2458	
Q045	=>8-729-245-83	TRANSISTOR 2SC2458	
Q046	=>8-729-245-83	TRANSISTOR 2SC2458	
Q047	=>8-729-245-83	TRANSISTOR 2SC2458	
Q048	=>8-729-245-83	TRANSISTOR 2SC2458	
Q049	=>8-729-204-83	TRANSISTOR 2SA1048-GR	
Q050	=>8-729-245-83	TRANSISTOR 2SC2458	
Q051	=>8-729-204-83	TRANSISTOR 2SA1048-GR	
Q052	=>8-729-245-83	TRANSISTOR 2SC2458	
Q053	=>8-729-245-83	TRANSISTOR 2SC2458	
Q054	=>8-729-245-83	TRANSISTOR 2SC2458	
Q055	8-729-113-32	TRANSISTOR 2SB733	

NOTE:

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
Q057	=>8-729-245-83	TRANSISTOR 2SC2458		R069	1-247-831-00	CARBON 1K 5% 1/6W	
Q058	=>8-729-245-83	TRANSISTOR 2SC2458		R070	1-247-831-00	CARBON 1K 5% 1/6W	
Q059	=>8-729-245-83	TRANSISTOR 2SC2458		R071	1-247-858-00	CARBON 13K 5% 1/6W	
Q060	=>8-729-204-83	TRANSISTOR 2SA1048-GR		R072	1-247-879-00	CARBON 100K 5% 1/6W	
Q061	=>8-729-204-83	TRANSISTOR 2SA1048-GR		R073	1-247-862-00	CARBON 20K 5% 1/6W	
Q062	=>8-729-245-83	TRANSISTOR 2SC2458		R074	1-247-863-00	CARBON 22K 5% 1/6W	
Q068	=>8-729-245-83	TRANSISTOR 2SC2458		R075	1-247-842-00	CARBON 3K 5% 1/6W	
Q069	=>8-729-204-83	TRANSISTOR 2SA1048-GR		R076	1-247-871-00	CARBON 47K 5% 1/6W	
RESISTOR				R077	1-247-839-00	CARBON 2.2K 5% 1/6W	
R001	1-247-831-00	CARBON 1K 5% 1/6W		R078	1-247-839-00	CARBON 2.2K 5% 1/6W	
R002	1-247-831-00	CARBON 1K 5% 1/6W		R079	1-247-839-00	CARBON 2.2K 5% 1/6W	
R003	1-247-835-00	CARBON 1.5K 5% 1/6W		R080	1-247-864-00	CARBON 24K 5% 1/6W	
R004	1-247-835-00	CARBON 1.5K 5% 1/6W		R081	1-247-831-00	CARBON 1K 5% 1/6W	
R005	1-247-855-00	CARBON 10K 5% 1/6W		R082	1-247-831-00	CARBON 1K 5% 1/6W	
R006	1-247-867-00	CARBON 33K 5% 1/6W		R083	1-247-847-00	CARBON 4.7K 5% 1/6W	
R007	1-247-855-00	CARBON 10K 5% 1/6W		R084	1-247-855-00	CARBON 10K 5% 1/6W	
R008	1-247-831-00	CARBON 1K 5% 1/6W		R085	1-247-867-00	CARBON 33K 5% 1/6W	
R009	1-247-831-00	CARBON 1K 5% 1/6W		R086	1-247-823-00	CARBON 470 5% 1/6W	
R010	1-247-870-00	CARBON 43K 5% 1/6W		R087	1-247-838-00	CARBON 2K 5% 1/6W	
R011	1-247-865-00	CARBON 27K 5% 1/6W		R088	1-247-875-00	CARBON 68K 5% 1/6W	
R012	1-247-875-00	CARBON 68K 5% 1/6W		R099	1-247-831-00	CARBON 1K 5% 1/6W	
R016	1-247-867-00	CARBON 33K 5% 1/6W		R100	1-247-855-00	CARBON 10K 5% 1/6W	
R018	1-247-873-00	CARBON 56K 5% 1/6W		R101	1-247-866-00	CARBON 30K 5% 1/6W	
R019	1-247-873-00	CARBON 56K 5% 1/6W		R102	1-247-835-00	CARBON 1.5K 5% 1/6W	
R020	1-247-847-00	CARBON 4.7K 5% 1/6W		R103	1-247-839-00	CARBON 2.2K 5% 1/6W	
R021	1-247-831-00	CARBON 1K 5% 1/6W		R104	1-247-807-00	CARBON 100 5% 1/6W	
R022	1-247-873-00	CARBON 56K 5% 1/6W		R105	1-247-855-00	CARBON 10K 5% 1/6W	
R023	1-247-863-00	CARBON 22K 5% 1/6W		R106	1-247-831-00	CARBON 1K 5% 1/6W	
R024	1-247-873-00	CARBON 56K 5% 1/6W		R107	1-247-821-00	CARBON 390 5% 1/6W	
R025	1-247-871-00	CARBON 47K 5% 1/6W		R108	1-247-821-00	CARBON 390 5% 1/6W	
R026	1-247-871-00	CARBON 47K 5% 1/6W		R109	1-247-831-00	CARBON 1K 5% 1/6W	
R027	1-247-869-00	CARBON 39K 5% 1/6W		R110	1-247-835-00	CARBON 1.5K 5% 1/6W	
R028	1-247-871-00	CARBON 47K 5% 1/6W		R111	1-247-831-00	CARBON 1K 5% 1/6W	
R029	1-247-852-00	CARBON 7.5K 5% 1/6W		R112	1-247-855-00	CARBON 10K 5% 1/6W	
R044	1-247-847-00	CARBON 4.7K 5% 1/6W		R113	1-247-863-00	CARBON 22K 5% 1/6W	
R045	1-247-863-00	CARBON 22K 5% 1/6W		R114	1-247-855-00	CARBON 10K 5% 1/6W	
R047	1-247-821-00	CARBON 390 5% 1/6W		R115	1-247-863-00	CARBON 22K 5% 1/6W	
R048	1-247-839-00	CARBON 2.2K 5% 1/6W		R116	1-247-867-00	CARBON 33K 5% 1/6W	
R049	1-247-821-00	CARBON 390 5% 1/6W		R117	1-247-867-00	CARBON 33K 5% 1/6W	
R050	1-247-821-00	CARBON 390 5% 1/6W		R119	1-247-843-00	CARBON 3.3K 5% 1/6W	
R051	1-247-821-00	CARBON 390 5% 1/6W		R120	1-247-855-00	CARBON 10K 5% 1/6W	
R052	1-247-821-00	CARBON 390 5% 1/6W		R121	1-247-855-00	CARBON 10K 5% 1/6W	
R053	1-247-821-00	CARBON 390 5% 1/6W		R123	1-247-831-00	CARBON 1K 5% 1/6W	
R054	1-247-839-00	CARBON 2.2K 5% 1/6W		R124	1-247-825-00	CARBON 560 5% 1/6W	
R055	1-247-839-00	CARBON 2.2K 5% 1/6W		R125	1-247-860-00	CARBON 16K 5% 1/6W	
R057	1-247-855-00	CARBON 10K 5% 1/6W		R126	1-247-873-00	CARBON 56K 5% 1/6W	
R059	1-247-855-00	CARBON 10K 5% 1/6W		R127	1-247-831-00	CARBON 1K 5% 1/6W	
R063	1-247-841-00	CARBON 2.7K 5% 1/6W		R128	1-247-824-00	CARBON 510 5% 1/6W	
R064	1-247-831-00	CARBON 1K 5% 1/6W		R129	1-247-838-00	CARBON 2K 5% 1/6W	
R066	1-247-831-00	CARBON 1K 5% 1/6W		R130	1-247-838-00	CARBON 2K 5% 1/6W	
R067	1-247-886-00	CARBON 200K 5% 1/6W		R131	1-247-855-00	CARBON 10K 5% 1/6W	
R068	1-247-839-00	CARBON 2.2K 5% 1/6W		R132	1-247-855-00	CARBON 10K 5% 1/6W	
				R133	1-247-843-00	CARBON 3.3K 5% 1/6W	

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R134	1-247-855-00	CARBON	10K 5% 1/6W	R187	1-247-846-00	CARBON	4.3K 5% 1/6W
R135	1-247-843-00	CARBON	3.3K 5% 1/6W	R188	1-247-855-00	CARBON	10K 5% 1/6W
R136	1-247-855-00	CARBON	10K 5% 1/6W	R189	1-247-858-00	CARBON	13K 5% 1/6W
R137	1-247-855-00	CARBON	10K 5% 1/6W	R190	1-247-875-00	CARBON	68K 5% 1/6W
R138	1-247-855-00	CARBON	10K 5% 1/6W	R191	1-247-882-00	CARBON	130K 5% 1/6W
R139	1-247-823-00	CARBON	470 5% 1/6W	R192	1-247-887-00	CARBON	220K 5% 1/6W
R140	1-247-823-00	CARBON	470 5% 1/6W	R193	1-247-831-00	CARBON	1K 5% 1/6W
R141	1-247-859-00	CARBON	15K 5% 1/6W	R194	1-247-831-00	CARBON	1K 5% 1/6W
R142	1-247-864-00	CARBON	24K 5% 1/6W	R195	1-247-830-00	CARBON	910 5% 1/6W
R143	1-247-831-00	CARBON	1K 5% 1/6W	R196	1-247-837-00	CARBON	1.8K 5% 1/6W
R144	1-247-826-00	CARBON	620 5% 1/6W	R197	1-247-822-00	CARBON	430 5% 1/6W
R145	1-247-838-00	CARBON	2K 5% 1/6W	R198	1-247-855-00	CARBON	10K 5% 1/6W
R146	1-247-844-00	CARBON	3.6K 5% 1/6W	R199	1-247-838-00	CARBON	2K 5% 1/6W
R147	1-247-824-00	CARBON	510 5% 1/6W	R200	1-247-873-00	CARBON	56K 5% 1/6W
R148	1-247-824-00	CARBON	510 5% 1/6W	R201	1-247-873-00	CARBON	56K 5% 1/6W
R149	1-247-824-00	CARBON	510 5% 1/6W	R202	1-247-879-00	CARBON	100K 5% 1/6W
R150	1-247-824-00	CARBON	510 5% 1/6W	R203	1-247-879-00	CARBON	100K 5% 1/6W
R151	1-247-855-00	CARBON	10K 5% 1/6W	R204	1-247-855-00	CARBON	10K 5% 1/6W
R152	1-247-855-00	CARBON	10K 5% 1/6W	R205	1-247-871-00	CARBON	47K 5% 1/6W
R153	1-247-831-00	CARBON	1K 5% 1/6W	R206	1-247-879-00	CARBON	100K 5% 1/6W
R154	1-247-855-00	CARBON	10K 5% 1/6W	R207	1-247-855-00	CARBON	10K 5% 1/6W
R155	1-247-855-00	CARBON	10K 5% 1/6W	R209	1-247-814-00	CARBON	200 5% 1/6W
R156	1-247-824-00	CARBON	510 5% 1/6W	R210	1-247-808-00	CARBON	110 5% 1/6W
R157	1-247-824-00	CARBON	510 5% 1/6W	R211	1-247-833-00	CARBON	1.2K 5% 1/6W
R158	1-247-815-00	CARBON	220 5% 1/6W	R212	1-247-863-00	CARBON	22K 5% 1/6W
R159	1-247-848-00	CARBON	5.1K 5% 1/6W	R213	1-247-839-00	CARBON	2.2K 5% 1/6W
R160	1-247-871-00	CARBON	47K 5% 1/6W	R214	1-247-863-00	CARBON	22K 5% 1/6W
R161	1-247-855-00	CARBON	10K 5% 1/6W	R215	1-247-857-00	CARBON	12K 5% 1/6W
R162	1-247-841-00	CARBON	2.7K 5% 1/6W	R216	1-247-858-00	CARBON	13K 5% 1/6W
R163	1-247-850-00	CARBON	6.2K 5% 1/6W	R217	1-247-855-00	CARBON	10K 5% 1/6W
R164	1-247-848-00	CARBON	5.1K 5% 1/6W	R218	1-247-841-00	CARBON	2.7K 5% 1/6W
R165	1-247-841-00	CARBON	2.7K 5% 1/6W	R219	1-247-863-00	CARBON	22K 5% 1/6W
R166	1-247-875-00	CARBON	68K 5% 1/6W	R220	1-247-855-00	CARBON	10K 5% 1/6W
R167	1-247-859-00	CARBON	15K 5% 1/6W	R221	1-247-855-00	CARBON	10K 5% 1/6W
R168	1-247-831-00	CARBON	1K 5% 1/6W	R222	1-247-855-00	CARBON	10K 5% 1/6W
R169	1-247-839-00	CARBON	2.2K 5% 1/6W	R224	1-247-831-00	CARBON	1K 5% 1/6W
R170	1-247-882-00	CARBON	130K 5% 1/6W	R227	1-247-803-00	CARBON	68 5% 1/6W
R171	1-247-879-00	CARBON	100K 5% 1/6W	R240	1-247-804-00	CARBON	75 5% 1/6W
R172	1-247-895-00	CARBON	470K 5% 1/6W	R258	1-247-844-00	CARBON	3.6K 5% 1/6W
R173	1-247-857-00	CARBON	12K 5% 1/6W	R259	1-247-863-00	CARBON	22K 5% 1/6W
R174	1-247-838-00	CARBON	2K 5% 1/6W	R264	1-247-863-00	CARBON	22K 5% 1/6W
R175	1-247-869-00	CARBON	39K 5% 1/6W	R265	1-247-879-00	CARBON	100K 5% 1/6W
R176	1-247-878-00	CARBON	91K 5% 1/6W	R266	1-247-818-00	CARBON	300 5% 1/6W
R177	1-247-847-00	CARBON	4.7K 5% 1/6W	R267	1-247-838-00	CARBON	2K 5% 1/6W
R178	1-247-859-00	CARBON	15K 5% 1/6W	R270	1-247-839-00	CARBON	2.2K 5% 1/6W
R179	1-247-855-00	CARBON	10K 5% 1/6W	R271	1-212-849-00	FUSIBLE	4.7 5% 1/4W E
R180	1-247-879-00	CARBON	100K 5% 1/6W	R272	1-247-803-00	CARBON	68 5% 1/6W
R181	1-247-875-00	CARBON	68K 5% 1/6W	R273	1-247-875-00	CARBON	68K 5% 1/6W
R182	1-247-855-00	CARBON	10K 5% 1/6W	R276	1-247-871-00	CARBON	47K 5% 1/6W
R183	1-247-867-00	CARBON	33K 5% 1/6W	R278	1-247-855-00	CARBON	10K 5% 1/6W
R184	1-247-828-00	CARBON	750 5% 1/6W	R280	1-247-867-00	CARBON	33K 5% 1/6W
R185	1-247-831-00	CARBON	1K 5% 1/6W	R281	1-247-807-00	CARBON	100 5% 1/6W
R186	1-247-830-00	CARBON	910 5% 1/6W	R282	1-247-847-00	CARBON	4.7K 5% 1/6W

NOTE:

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R304	1-247-831-00	CARBON	1K 5% 1/6W	<u>CAPACITOR</u>			
R311	1-247-843-00	CARBON	3.3K 5% 1/6W	C501	1-136-215-00	FILM	0.0068MF 10% 400V
R312	1-247-849-00	CARBON	5.6K 5% 1/6W	C502	1-161-013-00	CERAMIC	0.01MF 10% 25V
R315	1-247-855-00	CARBON	10K 5% 1/6W	C503	1-123-320-00	ELECT	100MF 20% 16V
R316	1-247-900-00	CARBON	750K 5% 1/6W	C504	1-161-003-00	CERAMIC	0.0015MF 10% 25V
R350	1-247-879-00	CARBON	100K 5% 1/6W	C505	1-123-305-00	ELECT	33MF 20% 10V
R351	1-247-871-00	CARBON	47K 5% 1/6W	C506	1-161-015-00	CERAMIC	0.015MF 10% 25V
R352	1-247-855-00	CARBON	10K 5% 1/6W	C507	1-123-356-00	ELECT	10MF 20% 16V
R353	1-247-847-00	CARBON	4.7K 5% 1/6W	C508	1-123-356-00	ELECT	10MF 20% 16V
R354	1-247-847-00	CARBON	4.7K 5% 1/6W	C509	1-123-356-00	ELECT	10MF 20% 16V
R355	1-247-855-00	CARBON	10K 5% 1/6W	C510	1-108-601-00	MYLAR	0.082MF 5% 50V
R356	1-247-879-00	CARBON	100K 5% 1/6W	C511	1-161-011-00	CERAMIC	0.0068MF 10% 25V
R357	1-247-879-00	CARBON	100K 5% 1/6W	C512	1-123-356-00	ELECT	10MF 20% 16V
R358	1-247-848-00	CARBON	5.1K 5% 1/6W	C513	1-123-306-00	ELECT	47MF 20% 10V
R359	1-247-855-00	CARBON	10K 5% 1/6W	C514	1-123-317-00	ELECT	22MF 20% 16V
R360	1-247-879-00	CARBON	100K 5% 1/6W	C515	1-123-351-00	ELECT	0.47MF 20% 50V
R361	1-247-879-00	CARBON	100K 5% 1/6W	C516	1-123-356-00	ELECT	10MF 20% 16V
R362	1-247-879-00	CARBON	100K 5% 1/6W	C517	1-123-316-00	ELECT	10MF 20% 16V
R363	1-247-878-00	CARBON	91K 5% 1/6W	C518	1-161-004-00	CERAMIC	0.0018MF 10% 25V
R364	1-247-873-00	CARBON	56K 5% 1/6W	C519	1-102-111-00	CERAMIC	270PF 10% 50V
R365	1-247-831-00	CARBON	1K 5% 1/6W	C520	1-107-166-00	MICA	62PF 10% 500V
R366	1-247-855-00	CARBON	10K 5% 1/6W	C522	1-123-356-00	ELECT	10MF 20% 16V
R367	1-247-815-00	CARBON	220 5% 1/6W	C523	1-123-356-00	ELECT	10MF 20% 16V
<u>VARIABLE RESISTOR</u>				C524	1-123-356-00	ELECT	10MF 20% 16V
RV001	1-228-749-00	RES, ADJ, CARBON 22K		C525	1-123-380-00	ELECT	1MF 20% 50V
RV002	1-228-746-00	RES, ADJ, CARBON 2.2K		C526	1-123-328-00	ELECT	4.7MF 20% 25V
RV003	1-228-744-00	RES, ADJ, CARBON 470		C527	1-161-017-00	CERAMIC	0.022MF 10% 25V
RV004	1-228-995-00	RES, ADJ, METAL GLAZE 22K		C528	1-161-323-00	CERAMIC	0.001MF 10% 50V
RV005	1-228-748-00	RES, ADJ, CARBON 10K		C529	1-123-356-00	ELECT	10MF 20% 16V
RV006	1-228-995-00	RES, ADJ, METAL GLAZE 22K		C530	1-161-012-00	CERAMIC	0.0082MF 10% 25V
RV008	1-228-993-00	RES, ADJ, METAL GLAZE 4.7K		C531	1-123-356-00	ELECT	10MF 20% 16V
RV009	1-228-750-00	RES, ADJ, CARBON 47K		C532	1-123-669-51	ELECT	33MF 20% 16V
RV010	1-228-750-00	RES, ADJ, CARBON 47K		C533	1-123-669-51	ELECT	33MF 20% 16V
RV011	1-228-750-00	RES, ADJ, CARBON 47K		C534	1-161-039-00	CERAMIC	0.001MF 10% 50V
RV012	1-228-991-00	RES, ADJ, METAL GLAZE 2.2K		C535	1-161-494-00	CERAMIC	0.022MF 30% 25V
RV013	1-228-989-00	RES, ADJ, METAL GLAZE 470		C536	1-161-021-00	CERAMIC	0.047MF 10% 25V
RV020	1-228-750-00	RES, ADJ, CARBON 47K		C537	1-123-321-00	ELECT	22MF 20% 16V
RV021	1-228-543-00	RES, VAR, CARBON 100K		C538	1-123-316-00	ELECT	10MF 20% 16V
<u>TRANSFORMER</u>				C539	1-123-318-00	ELECT	33MF 20% 16V
T001	1-426-093-00	COIL, REC C BPT		C601	1-108-569-00	MYLAR	0.0039MF 5% 50V
<u>CRYSTAL</u>				C602	1-108-563-00	MYLAR	0.0022MF 5% 50V
X001	1-527-345-00	CRYSTAL, OSC		C603	1-123-379-00	ELECT	0.47MF 20% 50V
*****				C604	1-123-380-00	ELECT	1MF 20% 50V
▲:A-6712-181-A AS-8 BOARD, COMPLETE				C605	1-123-380-00	ELECT	1MF 20% 50V
*****				C606	1-161-039-00	CERAMIC	0.001MF 10% 25V
▲:3-680-734-00 CASE (MAIN), SHIELD, AU				C701	1-123-328-00	ELECT	4.7MF 20% 25V
<u>BUZZER</u>				C702	1-130-475-00	MYLAR	0.0022MF 5% 50V
BZ601	1-529-015-00	BUZZER		C703	1-130-499-00	MYLAR	0.22MF 5% 50V
				C704	1-161-051-00	CERAMIC	0.01MF 10% 50V
				C705	1-161-039-00	CERAMIC	0.001MF 10% 50V
				C706	1-161-048-00	CERAMIC	0.0056MF 10% 50V
				C707	1-123-356-00	ELECT	10MF 20% 16V
				C708	1-123-328-00	ELECT	4.7MF 20% 25V

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
C709	1-130-491-00	MYLAR	0.047MF	5%	50V		
C710	1-123-356-00	ELECT	10MF	20%	16V		
C711	1-161-017-00	CERAMIC	0.022MF	10%	25V		
C712	1-123-328-00	ELECT	4.7MF	20%	25V		
C713	1-130-482-00	MYLAR	0.0082MF	5%	50V		
C714	1-127-472-00	ELECT(SOLID)	1MF	5%	16V		
C715	1-123-356-00	ELECT	10MF	20%	16V		
C716	1-123-356-00	ELECT	10MF	20%	16V		
C717	1-130-486-00	MYLAR	0.018MF	5%	50V		
C718	1-123-328-00	ELECT	4.7MF	20%	25V		
<u>CONNECTOR</u>				<u>TRANSISTOR</u>			
CN501	1-560-895-00	PIN, CONNECTOR	2P	Q501	8-729-967-32	TRANSISTOR	2SC2673
CN502	1-560-891-00	PIN, CONNECTOR	3P	Q502	=>8-729-245-83	TRANSISTOR	2SC2458
CN503	1-560-891-00	PIN, CONNECTOR	3P	Q503	=>8-729-245-83	TRANSISTOR	2SC2458
CN504	1-560-894-00	PIN, CONNECTOR	6P	Q504	8-729-900-89	TRANSISTOR	DTC144ES
CN505	1-560-891-00	PIN, CONNECTOR	3P	Q505	8-729-900-36	TRANSISTOR	DTC124ES
CN506	1-564-030-00	PIN, CONNECTOR	5P	Q506	8-729-900-89	TRANSISTOR	DTC144ES
CN701	1-560-900-00	PIN, CONNECTOR	12P	Q507	8-729-900-36	TRANSISTOR	DTC124ES
CN702	1-560-891-00	PIN, CONNECTOR	3P	Q508	8-729-967-32	TRANSISTOR	2SC2673
<u>DIODE</u>				Q509	=>8-729-245-83	TRANSISTOR	2SC2458
D501	8-719-911-19	DIODE	1SS119	Q510	=>8-729-245-83	TRANSISTOR	2SC2458
D502	8-719-911-19	DIODE	1SS119	Q511	8-729-823-64	TRANSISTOR	2SC2362
D503	8-719-100-18	DIODE	RD3.6E-B1	Q512	8-729-823-64	TRANSISTOR	2SC2362
D504	8-719-000-06	DIODE	MC921	Q513	=>8-729-204-83	TRANSISTOR	2SA1048-GR
D505	8-719-911-19	DIODE	1SS119	Q514	=>8-729-245-83	TRANSISTOR	2SC2458
D506	8-719-911-19	DIODE	1SS119	Q515	8-729-900-89	TRANSISTOR	DTC144ES
D507	8-719-911-19	DIODE	1SS119	Q516	8-729-900-89	TRANSISTOR	DTC144ES
D701	8-719-911-19	DIODE	1SS119	Q601	=>8-729-245-83	TRANSISTOR	2SC2458
D702	8-719-911-19	DIODE	1SS119	Q602	=>8-729-245-83	TRANSISTOR	2SC2458
D703	8-719-911-19	DIODE	1SS119	Q603	=>8-729-204-83	TRANSISTOR	2SA1048-GR
D704	8-719-911-19	DIODE	1SS119	Q604	8-729-900-36	TRANSISTOR	DTC124ES
D705	8-719-911-19	DIODE	1SS119	Q701	=>8-729-245-83	TRANSISTOR	2SC2458
D706	8-719-911-19	DIODE	1SS119	Q702	=>8-729-204-83	TRANSISTOR	2SA1048-GR
D707	8-719-911-19	DIODE	1SS119	Q703	=>8-729-204-83	TRANSISTOR	2SA1048-GR
D708	8-719-911-19	DIODE	1SS119	Q704	=>8-729-204-83	TRANSISTOR	2SA1048-GR
<u>IC</u>				Q705	8-729-900-36	TRANSISTOR	DTC124ES
IC501	8-759-800-46	IC	LA7046	Q706	=>8-729-245-83	TRANSISTOR	2SC2458
IC502	8-750-000-74	IC	CX20061	Q707	=>8-729-204-83	TRANSISTOR	2SA1048-GR
IC701	8-759-132-40	IC	UPC324C	Q708	=>8-729-245-83	TRANSISTOR	2SC2458
IC702	8-759-240-30	IC	TC4030BP	Q709	=>8-729-245-83	TRANSISTOR	2SC2458
IC703	8-759-132-40	IC	UPC324C	Q710	=>8-729-245-83	TRANSISTOR	2SC2458
IC704	8-759-240-81	IC	TC4081BP	Q711	=>8-729-245-83	TRANSISTOR	2SC2458
IC705	8-759-245-28	IC	TC4528BP	Q712	8-729-900-89	TRANSISTOR	DTC144ES
IC706	8-759-240-11	IC	TC4011BP	<u>RESISTOR</u>			
IC707	8-759-240-11	IC	TC4011BP	R501	1-246-501-00	CARBON	15K 5% 1/4W
IC708	8-759-240-13	IC	TC4013BP	R503	1-246-529-00	CARBON	220K 5% 1/4W
<u>COIL</u>				R504	1-246-499-00	CARBON	12K 5% 1/4W
L502	1-408-221-00	MICRO INDUCTOR	22MMH	R505	1-247-883-00	CARBON	150K 5% 1/6W
L503	1-407-964-00	MICRO INDUCTOR	33MMH	R506	1-246-505-00	CARBON	22K 5% 1/4W
				R507	1-246-515-00	CARBON	56K 5% 1/4W
				R508	1-246-497-00	CARBON	10K 5% 1/4W
				R509	1-202-473-00	SOLID	5.6M 5% 1/4W
				R510	1-246-487-00	CARBON	3.9K 5% 1/4W
				R511	1-246-495-00	CARBON	8.2K 5% 1/4W
				R512	1-246-513-00	CARBON	47K 5% 1/4W
				R513	1-246-513-00	CARBON	47K 5% 1/4W
				R514	1-246-489-00	CARBON	4.7K 5% 1/4W
				R515	1-246-511-00	CARBON	39K 5% 1/4W
				R516	1-246-499-00	CARBON	12K 5% 1/4W
				R517	1-246-487-00	CARBON	3.9K 5% 1/4W
				R518	1-246-521-00	CARBON	100K 5% 1/4W

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R519	1-247-791-00	CARBON	22 5% 1/6W	R711	1-247-871-00	CARBON	47K 5% 1/6W
R521	1-246-505-00	CARBON	22K 5% 1/4W	R712	1-247-871-00	CARBON	47K 5% 1/6W
R522	1-246-513-00	CARBON	47K 5% 1/4W	R713	1-215-445-00	METAL	10K 1% 1/6W
R523	1-246-491-00	CARBON	5.6K 5% 1/4W	R714	1-247-871-00	CARBON	47K 5% 1/6W
R524	1-246-497-00	CARBON	10K 5% 1/4W	R715	1-247-871-00	CARBON	47K 5% 1/6W
R525	1-246-505-00	CARBON	22K 5% 1/4W	R716	1-247-871-00	CARBON	47K 5% 1/6W
R526	1-246-513-00	CARBON	47K 5% 1/4W	R717	1-247-847-00	CARBON	4.7K 5% 1/6W
R527	1-246-497-00	CARBON	10K 5% 1/4W	R718	1-247-821-00	CARBON	390 5% 1/6W
R528	1-246-513-00	CARBON	47K 5% 1/4W	R719	1-247-849-00	CARBON	5.6K 5% 1/6W
R529	△ 1-212-849-00	FUSIBLE	4.7 5% 1/4W F	R720	1-247-855-00	CARBON	10K 5% 1/6W
R530	1-246-481-00	CARBON	2.2K 5% 1/4W	R721	1-214-753-00	METAL	10K 1% 1/4W
R531	1-246-505-00	CARBON	22K 5% 1/4W	R722	1-214-768-00	METAL	43K 1% 1/4W
R532	1-246-505-00	CARBON	22K 5% 1/4W	R723	1-214-726-00	METAL	750 1% 1/4W
R533	1-246-503-00	CARBON	18K 5% 1/4W	R724	1-247-795-00	CARBON	33 5% 1/6W
R534	1-246-465-00	CARBON	470 5% 1/4W	R725	1-247-849-00	CARBON	5.6K 5% 1/6W
R535	1-246-485-00	CARBON	3.3K 5% 1/4W	R726	1-247-903-00	CARBON	1M 5% 1/6W
R536	1-246-481-00	CARBON	2.2K 5% 1/4W	R727	1-247-847-00	CARBON	4.7K 5% 1/6W
R537	1-246-473-00	CARBON	1K 5% 1/4W	R728	1-247-832-00	CARBON	1.1K 5% 1/6W
R538	1-246-491-00	CARBON	5.6K 5% 1/4W	R729	1-247-847-00	CARBON	4.7K 5% 1/6W
R539	1-246-497-00	CARBON	10K 5% 1/4W	R730	1-247-903-00	CARBON	1M 5% 1/6W
R540	1-246-511-00	CARBON	39K 5% 1/4W	R731	1-247-839-00	CARBON	2.2K 5% 1/6W
R541	1-246-507-00	CARBON	27K 5% 1/4W	R732	1-247-847-00	CARBON	4.7K 5% 1/6W
R542	1-246-519-00	CARBON	82K 5% 1/4W	R733	1-247-903-00	CARBON	1M 5% 1/6W
R543	1-246-481-00	CARBON	2.2K 5% 1/4W	R734	1-247-867-00	CARBON	33K 5% 1/6W
R544	1-246-473-00	CARBON	1K 5% 1/4W	R735	1-247-879-00	CARBON	100K 5% 1/6W
R545	1-246-453-00	CARBON	150 5% 1/4W	R736	1-247-871-00	CARBON	47K 5% 1/6W
R546	1-246-489-00	CARBON	4.7K 5% 1/4W	R737	1-247-831-00	CARBON	1K 5% 1/6W
R547	1-246-425-00	CARBON	10 5% 1/4W	R738	1-247-831-00	CARBON	1K 5% 1/6W
R548	1-246-509-00	CARBON	33K 5% 1/4W	R739	1-247-847-00	CARBON	4.7K 5% 1/6W
R549	1-246-497-00	CARBON	10K 5% 1/4W	R740	1-247-827-00	CARBON	680 5% 1/6W
R550	1-246-491-00	CARBON	5.6K 5% 1/4W	R741	1-247-855-00	CARBON	10K 5% 1/6W
R551	1-246-481-00	CARBON	2.2K 5% 1/4W	R742	1-247-855-00	CARBON	10K 5% 1/6W
R601	1-247-855-00	CARBON	10K 5% 1/6W	R743	1-247-855-00	CARBON	10K 5% 1/6W
R602	1-247-861-00	CARBON	18K 5% 1/6W	R744	1-247-849-00	CARBON	5.6K 5% 1/6W
R603	1-247-881-00	CARBON	120K 5% 1/6W	R745	1-247-855-00	CARBON	10K 5% 1/6W
R604	1-247-879-00	CARBON	100K 5% 1/6W	R746	1-247-855-00	CARBON	10K 5% 1/6W
R605	1-247-833-00	CARBON	1.2K 5% 1/6W	R747	1-247-847-00	CARBON	4.7K 5% 1/6W
R606	1-247-849-00	CARBON	5.6K 5% 1/6W	R748	1-214-781-00	METAL	150K 1% 1/4W
R607	1-247-853-00	CARBON	8.2K 5% 1/6W	R749	1-247-871-00	CARBON	47K 5% 1/6W
R608	1-247-869-00	CARBON	39K 5% 1/6W	R750	1-247-861-00	CARBON	18K 5% 1/6W
R609	1-247-847-00	CARBON	4.7K 5% 1/6W	R751	1-247-903-00	CARBON	1M 5% 1/6W
R610	1-247-879-00	CARBON	100K 5% 1/6W	R752	1-247-831-00	CARBON	1K 5% 1/6W
R611	1-247-861-00	CARBON	33K 5% 1/6W	VARIABLE RESISTOR			
R701	1-214-751-00	METAL	8.2K 1% 1/4W	RV501	1-228-744-00	RES, ADJ, CARBON	470
R702	1-247-847-00	CARBON	4.7K 5% 1/6W	RV502	1-228-745-00	RES, ADJ, CARBON	1K
R703	1-247-903-00	CARBON	1M 5% 1/6W	RV503	1-228-752-00	RES, ADJ, CARBON	220K
R704	1-247-847-00	CARBON	4.7K 5% 1/6W	RV701	1-228-993-00	RES, ADJ, METAL GLAZE	4.7K
R705	1-247-903-00	CARBON	1M 5% 1/6W	RV702	1-228-991-00	RES, ADJ, METAL GLAZE	2.2K
R706	1-247-847-00	CARBON	4.7K 5% 1/6W	RV703	1-228-995-00	RES, ADJ, METAL GLAZE	22K
R707	1-247-903-00	CARBON	1M 5% 1/6W	RV704	1-228-750-00	RES, ADJ, CARBON	47K
R708	1-247-847-00	CARBON	4.7K 5% 1/6W	RV705	1-228-750-00	RES, ADJ, CARBON	47K
R709	1-247-903-00	CARBON	1M 5% 1/6W	RV706	1-228-997-00	RES, ADJ, METAL GLAZE	100K
R710	1-215-445-00	METAL	10K 1% 1/6W				

NOTE:

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
<u>TRANSFORMER</u>							
T501	1-433-275-00	TRANSFORMER, BIAS OSCILLATOR		C324	1-123-296-00	ELECT 220MF	20% 6.3V
<u>POST PIN</u>				C325	1-161-021-00	CERAMIC 0.047MF	10% 25V
TP501	3-846-049-11	PIN, LEAD		C326	1-123-328-00	ELECT 4.7MF	20% 25V
TP502	3-846-049-11	PIN, LEAD		C327	1-123-381-00	ELECT 2.2MF	20% 50V
TP503	3-846-049-11	PIN, LEAD		C329	1-161-021-00	CERAMIC 0.047MF	10% 25V
TP504	3-846-049-11	PIN, LEAD		C330	1-123-328-00	ELECT 4.7MF	20% 25V
TP601	3-846-049-11	PIN, LEAD		C331	1-123-381-00	ELECT 2.2MF	20% 50V
TP602	3-846-049-11	PIN, LEAD		C332	1-161-016-00	CERAMIC 0.018MF	10% 25V
TP603	3-846-049-11	PIN, LEAD		C333	1-161-013-00	CERAMIC 0.01MF	10% 25V
TP604	3-846-049-11	PIN, LEAD		C334	1-123-356-00	ELECT 10MF	20% 16V
TP701	3-846-049-11	PIN, LEAD		C335	1-123-380-00	ELECT 1MF	20% 50V
TP702	3-846-049-11	PIN, LEAD		C336	1-161-016-00	CERAMIC 0.018MF	10% 25V
TP703	3-846-049-11	PIN, LEAD		C337	1-161-016-00	CERAMIC 0.018MF	10% 25V
TP704	3-846-049-11	PIN, LEAD		C338	1-123-356-00	ELECT 10MF	20% 16V
TP705	3-846-049-11	PIN, LEAD		C339	1-161-021-00	CERAMIC 0.047MF	10% 25V
TP706	3-846-049-11	PIN, LEAD		C340	1-123-380-00	ELECT 1MF	20% 50V
TP707	3-846-049-11	PIN, LEAD		C341	1-161-017-00	CERAMIC 0.022MF	10% 25V
TP708	3-846-049-11	PIN, LEAD		C342	1-161-002-00	CERAMIC 0.0012MF	10% 25V
TP709	3-846-049-11	PIN, LEAD		C343	1-161-016-00	CERAMIC 0.018MF	10% 25V
TP710	3-846-049-11	PIN, LEAD		C344	1-161-013-00	CERAMIC 0.01MF	10% 25V
*****				C345	1-161-016-00	CERAMIC 0.018MF	10% 25V
6: A-6714-190-A	SS-22 BOARD, COMPLETE			C346	1-161-013-00	CERAMIC 0.01MF	10% 25V
	*****			C353	1-161-019-00	CERAMIC 0.033MF	10% 25V
6: 3-680-714-00	HEAT SINK			C354	1-161-019-00	CERAMIC 0.033MF	10% 25V
7-685-646-71	SCREW +BVTP 3X8 TYPE 2 IT-3			C355	1-123-330-00	ELECT 22MF	20% 16V
<u>CAPACITOR</u>				C356	1-123-328-00	ELECT 4.7MF	20% 25V
C301	1-123-330-00	ELECT 22MF	20% 16V	C357	1-123-306-00	ELECT 47MF	20% 10V
C302	1-130-516-51	MYLAR 0.01MF	10% 50V	C358	1-161-021-00	CERAMIC 0.047MF	10% 25V
C303	1-130-516-51	MYLAR 0.01MF	10% 50V	C359	1-123-333-00	ELECT 100MF	20% 16V
C304	1-123-354-00	ELECT 3.3MF	20% 50V	C360	1-123-332-00	ELECT 47MF	20% 16V
C305	1-161-021-00	CERAMIC 0.047MF	10% 25V	C362	1-123-333-00	ELECT 100MF	20% 16V
C306	1-123-354-00	ELECT 3.3MF	20% 50V	C363	1-123-354-00	ELECT 3.3MF	20% 50V
C307	1-161-021-00	CERAMIC 0.047MF	10% 25V	C364	1-161-021-00	CERAMIC 0.047MF	10% 25V
C308	1-123-354-00	ELECT 3.3MF	20% 50V	C365	1-161-019-00	CERAMIC 0.033MF	10% 25V
C309	1-161-021-00	CERAMIC 0.047MF	10% 25V	C366	1-161-021-00	CERAMIC 0.047MF	10% 25V
C310	1-130-516-51	MYLAR 0.01MF	10% 50V	C367	1-123-318-00	ELECT 33MF	20% 16V
C311	1-123-296-00	ELECT 220MF	20% 6.3V	C501	1-129-794-00	FILM 0.0033MF	5% 100V
C312	1-123-328-00	ELECT 4.7MF	20% 25V	C502	1-129-794-00	FILM 0.0033MF	5% 100V
C313	1-161-013-00	CERAMIC 0.01MF	10% 25V	C503	1-130-491-00	MYLAR 0.047MF	5% 50V
C314	1-123-306-00	ELECT 47MF	20% 10V	C504	1-130-487-00	MYLAR 0.022MF	5% 50V
C315	1-108-605-00	MYLAR 0.12MF	5% 50V	C505	1-130-491-00	MYLAR 0.047MF	5% 50V
C316	1-127-468-00	ELECT(SOLID) 0.22MF	5% 16V	C506	1-123-330-00	ELECT 22MF	20% 16V
C318	1-123-333-00	ELECT 100MF	20% 16V	C507	1-161-013-00	CERAMIC 0.01MF	10% 25V
C319	1-130-479-00	MYLAR 0.0047MF	5% 50V	C521	1-161-021-00	CERAMIC 0.047MF	10% 25V
C320	1-123-295-00	ELECT 100MF	20% 6.3V	C522	1-123-332-00	ELECT 47MF	20% 16V
C321	1-102-106-00	CERAMIC 100PF	10% 50V	C524	1-123-379-00	ELECT 0.47MF	20% 50V
C322	1-161-021-00	CERAMIC 0.047MF	10% 25V	C581	1-123-306-00	ELECT 47MF	20% 10V
C323	1-123-381-00	ELECT 2.2MF	20% 50V	C582	1-123-318-00	ELECT 33MF	20% 16V
				C583	1-123-318-00	ELECT 33MF	20% 16V

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description
<u>FILTER</u>		
CF501	1-56/-152-00	OSCILLATOR, CERAMIC
<u>CONNECTOR</u>		
CN301▲	1-560-467-00	PIN, CONNECTOR 4P
CN302▲	1-560-466-00	PIN, CONNECTOR 3P
CN303▲	1-560-892-00	PIN, CONNECTOR 4P
CN304▲	1-560-892-00	PIN, CONNECTOR 4P
CN305▲	1-560-890-00	PIN, CONNECTOR 2P
CN306▲	1-560-898-00	PIN, CONNECTOR 10P
CN308▲	1-560-891-00	PIN, CONNECTOR 3P
CN309▲	1-560-891-00	PIN, CONNECTOR 3P
CN310▲	1-560-892-00	PIN, CONNECTOR 4P
CN311▲	1-560-891-00	PIN, CONNECTOR 3P
CN312▲	1-560-891-00	PIN, CONNECTOR 3P
CN313▲	1-560-897-21	PIN, CONNECTOR 9P
CN314▲	1-560-891-00	PIN, CONNECTOR 3P
CN350▲	1-560-890-00	PIN, CONNECTOR 2P
CN351▲	1-560-891-00	PIN, CONNECTOR 3P
CN352▲	1-560-891-00	PIN, CONNECTOR 3P
CN501▲	1-560-897-00	PIN, CONNECTOR 9P
CN502▲	1-560-891-00	PIN, CONNECTOR 3P
CN503▲	1-560-891-00	PIN, CONNECTOR 3P
CN504▲	1-560-891-00	PIN, CONNECTOR 3P
CN505▲	1-560-892-00	PIN, CONNECTOR 4P
CN506▲	1-560-891-00	PIN, CONNECTOR 3P
CN507▲	1-560-892-00	PIN, CONNECTOR 4P
CN508▲	1-560-893-00	PIN, CONNECTOR 5P
CN509▲	1-560-891-00	PIN, CONNECTOR 3P
CN510▲	1-560-891-00	PIN, CONNECTOR 3P
CN511▲	1-560-891-00	PIN, CONNECTOR 3P
CN512▲	1-560-894-00	PIN, CONNECTOR 6P
CN513▲	1-560-894-00	PIN, CONNECTOR 6P
<u>DIODE</u>		
D301	8-719-100-57	DIODE RD10E-B2
D302	8-719-000-06	DIODE MC921
D303	8-719-911-19	DIODE 1SS119
D306	8-719-000-06	DIODE MC921
D307	8-719-162-07	DIODE RD6.2E-B
D308	8-719-000-06	DIODE MC921
D309	8-719-000-06	DIODE MC921
D310	8-719-000-06	DIODE MC921
D311	8-719-911-19	DIODE 1SS119
D312	8-719-911-19	DIODE 1SS119
D313	8-719-000-06	DIODE MC921
D314	8-719-911-19	DIODE 1SS119
D315	8-719-200-02	DIODE 10E2
D316	8-719-911-19	DIODE 1SS119
D317	8-719-000-12	DIODE MC931
D318	8-719-000-06	DIODE MC921
D319	8-719-911-19	DIODE 1SS119
D320	8-719-911-19	DIODE 1SS119
D321	8-719-000-06	DIODE MC921
D322	8-719-911-19	DIODE 1SS119
D323	8-719-911-19	DIODE 1SS119

Ref.No.	Part No.	Description	Remark
D325	8-719-911-19	DIODE 1SS119	
D326	8-719-911-19	DIODE 1SS119	
D551	8-719-911-19	DIODE 1SS119	
D552	8-719-911-19	DIODE 1SS119	
D553	8-719-911-19	DIODE 1SS119	
D554	8-719-911-19	DIODE 1SS119	
D555	8-719-911-19	DIODE 1SS119	
D556	8-719-911-19	DIODE 1SS119	
D557	8-719-911-19	DIODE 1SS119	
D558	8-719-911-19	DIODE 1SS119	
D559	8-719-911-19	DIODE 1SS119	
<u>IC</u>			
IC301	8-751-941-00	IC CX194B-0	
IC302	8-759-135-80	IC UPC358C	
IC303	8-759-145-58	IC UPC4558C	
IC304	8-759-132-40	IC UPC324C	
IC305	8-759-240-53	IC TC4053BP	
IC306	8-759-132-40	IC UPC324C	
IC307	8-759-240-53	IC TC4053BP	
IC308	8-759-135-80	IC UPC358C	
IC309	8-759-600-24	IC M54543L	
IC501	8-759-909-22	IC MB88421-123M	
IC502	8-759-800-72	IC LA7205	
<u>COIL</u>			
L501	1-408-418-00	MICRO INDUCTOR 56UH	
<u>IC LINK</u>			
PS301A	1-532-679-00	LINK, IC	
<u>TRANSISTOR</u>			
Q301	=>8-729-805-13	TRANSISTOR 2SC1475-13	
Q303	=>8-729-245-83	TRANSISTOR 2SC2458	
Q304	8-729-900-89	TRANSISTOR DTC144ES	
Q305	8-729-900-89	TRANSISTOR DTC144ES	
Q306	=>8-729-245-83	TRANSISTOR 2SC2458	
Q307	=>8-729-204-83	TRANSISTOR 2SA1048-GR	
Q308	=>8-729-245-83	TRANSISTOR 2SC2458	
Q309	8-729-178-55	TRANSISTOR 2SC2785	
Q310	8-729-900-36	TRANSISTOR DTC124ES	
Q311	8-729-900-36	TRANSISTOR DTC124ES	
Q312	8-729-900-36	TRANSISTOR DTC124ES	
Q313	8-729-900-36	TRANSISTOR DTC124ES	
Q314	8-729-900-36	TRANSISTOR DTC124ES	
Q315	8-729-900-36	TRANSISTOR DTC124ES	
Q317	8-729-900-65	TRANSISTOR DTA144ES	
Q318	=>8-729-245-83	TRANSISTOR 2SC2458	
Q319	8-729-900-36	TRANSISTOR DTC124ES	
Q320	8-729-900-65	TRANSISTOR DTA144ES	
Q321	8-729-900-36	TRANSISTOR DTC124ES	
Q322	8-729-900-89	TRANSISTOR DTC144ES	
Q323	8-729-900-36	TRANSISTOR DTC124ES	
Q324	8-729-900-36	TRANSISTOR DTC124ES	

NOTE:

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When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
Q325	=>8-729-245-83	TRANSISTOR 2SC2458		R302	1-247-821-00	CARBON 390 5% 1/6W	
Q326	=>8-729-245-83	TRANSISTOR 2SC2458		R303	1-206-482-00	METAL OXIDE 62 5% 2W	F
Q327	=>8-729-204-83	TRANSISTOR 2SA1048-GR		R304	1-247-863-00	CARBON 22K 5% 1/6W	
Q328	=>8-729-245-83	TRANSISTOR 2SC2458		R305	1-247-863-00	CARBON 22K 5% 1/6W	
Q329	=>8-729-245-83	TRANSISTOR 2SC2458		R308	1-247-863-00	CARBON 22K 5% 1/6W	
Q330	=>8-729-245-83	TRANSISTOR 2SC2458		R309	1-247-855-00	CARBON 10K 5% 1/6W	
Q331	=>8-729-177-32	TRANSISTOR 2SD773		R310	1-247-859-00	CARBON 15K 5% 1/6W	
Q332	=>8-729-245-83	TRANSISTOR 2SC2458		R312	1-247-831-00	CARBON 1K 5% 1/6W	
Q333	8-729-103-33	TRANSISTOR 2SD1310		R313	1-247-879-00	CARBON 100K 5% 1/6W	
Q334	8-729-178-54	TRANSISTOR 2SC2785		R314	1-247-871-00	CARBON 47K 5% 1/6W	
Q335	=>8-729-204-83	TRANSISTOR 2SA1048-GR		R315	1-247-831-00	CARBON 1K 5% 1/6W	
Q336	=>8-729-204-83	TRANSISTOR 2SA1048-GR		R316	1-247-859-00	CARBON 15K 5% 1/6W	
Q337	8-729-900-36	TRANSISTOR DTC124ES		R317	1-247-871-00	CARBON 47K 5% 1/6W	
Q338	8-729-900-89	TRANSISTOR DTC144ES		R318	1-247-879-00	CARBON 100K 5% 1/6W	
Q339	=>8-729-204-83	TRANSISTOR 2SA1048-GR		R319	1-247-859-00	CARBON 15K 5% 1/6W	
Q340	8-729-900-36	TRANSISTOR DTC124ES		R320	1-247-831-00	CARBON 1K 5% 1/6W	
Q341	=>8-729-245-83	TRANSISTOR 2SC2458		R321	1-247-855-00	CARBON 10K 5% 1/6W	
Q342	=>8-729-204-83	TRANSISTOR 2SA1048-GR		R322	1-212-850-00	FUSIBLE 5.1 5% 1/4W	F
Q343	=>8-729-177-43	TRANSISTOR 2SD774		R323	1-247-865-00	CARBON 27K 5% 1/6W	
Q344	=>8-729-805-13	TRANSISTOR 2SC1475-13		R324	1-247-831-00	CARBON 1K 5% 1/6W	
Q346	8-729-900-36	TRANSISTOR DTC124ES		R325	1-247-855-00	CARBON 10K 5% 1/6W	
Q347	=>8-729-204-83	TRANSISTOR 2SA1048-GR		R326	1-247-871-00	CARBON 47K 5% 1/6W	
Q348	8-729-900-89	TRANSISTOR DTC144ES		R327	1-247-879-00	CARBON 100K 5% 1/6W	
Q349	8-729-900-36	TRANSISTOR DTC124ES		R328	1-247-871-00	CARBON 47K 5% 1/6W	
Q350	=>8-729-204-83	TRANSISTOR 2SA1048-GR		R329	1-247-829-00	CARBON 820 5% 1/6W	
Q351	=>8-729-245-83	TRANSISTOR 2SC2458		R330	1-247-871-00	CARBON 47K 5% 1/6W	
Q352	8-729-103-33	TRANSISTOR 2SD1310		R331	1-247-879-00	CARBON 100K 5% 1/6W	
Q353	=>8-729-204-83	TRANSISTOR 2SA1048-GR		R332	1-247-879-00	CARBON 100K 5% 1/6W	
Q354	8-729-900-36	TRANSISTOR DTC124ES		R333	1-247-835-00	CARBON 1.5K 5% 1/6W	
Q355	8-729-900-36	TRANSISTOR DTC124ES		R335	1-247-819-00	CARBON 330 5% 1/6W	
Q358	=>8-729-204-83	TRANSISTOR 2SA1048-GR		R336	1-247-891-00	CARBON 330K 5% 1/6W	
Q361	8-729-900-36	TRANSISTOR DTC124ES		R337	1-247-859-00	CARBON 15K 5% 1/6W	
Q362	8-729-900-65	TRANSISTOR DTA144ES		R338	1-247-851-00	CARBON 6.8K 5% 1/6W	
Q363	8-729-900-36	TRANSISTOR DTC124ES		R339	1-247-891-00	CARBON 330K 5% 1/6W	
Q364	8-729-900-36	TRANSISTOR DTC124ES		R340	1-247-849-00	CARBON 5.6K 5% 1/6W	
Q365	=>8-729-204-83	TRANSISTOR 2SA1048-GR		R342	1-247-855-00	CARBON 10K 5% 1/6W	
Q366	=>8-729-245-83	TRANSISTOR 2SC2458		R343	1-247-831-00	CARBON 1K 5% 1/6W	
Q368	8-729-178-54	TRANSISTOR 2SC2785		R344	1-247-903-00	CARBON 1M 5% 1/6W	
Q501	8-729-900-36	TRANSISTOR DTC124ES		R345	1-212-857-00	FUSIBLE 10 5% 1/4W	F
Q502	=>8-729-245-83	TRANSISTOR 2SC2458		R346	1-247-819-00	CARBON 330 5% 1/6W	
Q503	=>8-729-245-83	TRANSISTOR 2SC2458		R347	1-247-855-00	CARBON 10K 5% 1/6W	
Q504	8-729-900-36	TRANSISTOR DTC124ES		R348	1-247-831-00	CARBON 1K 5% 1/6W	
Q505	8-729-900-36	TRANSISTOR DTC124ES		R349	1-247-903-00	CARBON 1M 5% 1/6W	
Q551	8-729-900-36	TRANSISTOR DTC124ES		R350	1-247-871-00	CARBON 47K 5% 1/6W	
Q552	8-729-177-32	TRANSISTOR 2SD773		R351	1-247-831-00	CARBON 1K 5% 1/6W	
Q553	8-729-900-36	TRANSISTOR DTC124ES		R352	1-247-855-00	CARBON 10K 5% 1/6W	
Q554	8-729-188-23	TRANSISTOR 2SD882		R353	1-247-821-00	CARBON 390 5% 1/6W	
Q555	8-729-900-36	TRANSISTOR DTC124ES		R354	1-247-855-00	CARBON 10K 5% 1/6W	
Q556	8-729-177-32	TRANSISTOR 2SD773		R356	1-247-871-00	CARBON 47K 5% 1/6W	
Q557	8-729-900-36	TRANSISTOR DTC124ES		R357	1-247-855-00	CARBON 10K 5% 1/6W	
Q558	8-729-188-23	TRANSISTOR 2SD882		R358	1-247-855-00	CARBON 10K 5% 1/6W	
RESISTOR				R359	1-247-831-00	CARBON 1K 5% 1/6W	
R301	1-212-855-00	FUSIBLE	8.2 5% 1/4W F	R360	1-247-903-00	CARBON 1M 5% 1/6W	

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When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R361	1-247-903-00	CARBON	1M 5% 1/6W	R418	1-247-855-00	CARBON	10K 5% 1/6W
R362	1-247-887-00	CARBON	220K 5% 1/6W	R419	1-247-847-00	CARBON	4.7K 5% 1/6W
R363	1-247-887-00	CARBON	220K 5% 1/6W	R420	1-247-855-00	CARBON	10K 5% 1/6W
R364	1-247-865-00	CARBON	27K 5% 1/6W	R421	1-247-873-00	CARBON	56K 5% 1/6W
R365	1-247-851-00	CARBON	6.8K 5% 1/6W	R422	1-247-869-00	CARBON	39K 5% 1/6W
R366	1-247-865-00	CARBON	27K 5% 1/6W	R423	△1-217-393-00	FUSIBLE	33 5% 1/4W F
R367	1-247-867-00	CARBON	33K 5% 1/6W	R424	1-247-808-00	CARBON	110 5% 1/6W
R368	1-247-867-00	CARBON	33K 5% 1/6W	R425	1-247-808-00	CARBON	110 5% 1/6W
R369	1-247-864-00	CARBON	24K 5% 1/6W	R426	1-247-831-00	CARBON	1K 5% 1/6W
R370	1-247-859-00	CARBON	15K 5% 1/6W	R427	1-247-855-00	CARBON	10K 5% 1/6W
R371	1-247-872-00	CARBON	51K 5% 1/6W	R428	1-247-871-00	CARBON	47K 5% 1/6W
R372	1-247-825-00	CARBON	560 5% 1/6W	R429	△1-212-366-00	METAL OXIDE	3.3 5% 1W F
R373	1-247-842-00	CARBON	3K 5% 1/6W	R430	△1-246-981-00	CARBON	4.7 5% 1/8W F
R374	1-247-841-00	CARBON	2.7K 5% 1/6W	R431	1-247-831-00	CARBON	1K 5% 1/6W
R375	1-247-837-00	CARBON	1.8K 5% 1/6W	R432	1-247-838-00	CARBON	2K 5% 1/6W
R376	1-247-873-00	CARBON	56K 5% 1/6W	R433	1-247-847-00	CARBON	4.7K 5% 1/6W
R377	1-247-900-00	CARBON	750K 5% 1/6W	R434	1-247-855-00	CARBON	10K 5% 1/6W
R378	1-247-847-00	CARBON	4.7K 5% 1/6W	R435	△1-212-360-00	METAL OXIDE	1 5% 1W F
R379	1-247-871-00	CARBON	47K 5% 1/6W	R436	△1-246-981-00	CARBON	4.7 5% 1/8W F
R380	1-247-859-00	CARBON	15K 5% 1/6W	R437	1-247-855-00	CARBON	10K 5% 1/6W
R381	1-247-857-00	CARBON	12K 5% 1/6W	R438	1-247-847-00	CARBON	4.7K 5% 1/6W
R382	1-247-849-00	CARBON	5.6K 5% 1/6W	R439	1-247-823-00	CARBON	470 5% 1/6W
R383	1-247-827-00	CARBON	680 5% 1/6W	R440	1-247-849-00	CARBON	5.6K 5% 1/6W
R384	1-247-839-00	CARBON	2.2K 5% 1/6W	R441	1-247-847-00	CARBON	4.7K 5% 1/6W
R385	1-247-839-00	CARBON	2.2K 5% 1/6W	R442	1-247-823-00	CARBON	470 5% 1/6W
R386	1-247-883-00	CARBON	150K 5% 1/6W	R443	△1-212-360-00	METAL OXIDE	1 5% 1W F
R387	1-247-883-00	CARBON	150K 5% 1/6W	R444	△1-246-981-00	CARBON	4.7 5% 1/4W F
R388	1-247-847-00	CARBON	4.7K 5% 1/6W	R446	△1-212-849-00	FUSIBLE	4.7 5% 1/4W F
R389	1-247-857-00	CARBON	12K 5% 1/6W	R448	1-247-863-00	CARBON	22K 5% 1/6W
R390	1-247-867-00	CARBON	33K 5% 1/6W	R449	1-247-871-00	CARBON	47K 5% 1/6W
R391	1-247-887-00	CARBON	220K 5% 1/6W	R450	1-247-855-00	CARBON	10K 5% 1/6W
R392	1-247-879-00	CARBON	100K 5% 1/6W	R451	1-247-867-00	CARBON	33K 5% 1/6W
R393	1-247-879-00	CARBON	100K 5% 1/6W	R452	1-247-847-00	CARBON	4.7K 5% 1/6W
R394	1-247-897-00	CARBON	560K 5% 1/6W	R453	1-247-867-00	CARBON	33K 5% 1/6W
R395	1-247-897-00	CARBON	560K 5% 1/6W	R454	1-247-871-00	CARBON	47K 5% 1/6W
R396	1-247-879-00	CARBON	100K 5% 1/6W	R455	1-247-855-00	CARBON	10K 5% 1/6W
R397	1-247-879-00	CARBON	100K 5% 1/6W	R456	1-247-825-00	CARBON	560 5% 1/6W
R398	1-247-883-00	CARBON	150K 5% 1/6W	R457	1-247-855-00	CARBON	10K 5% 1/6W
R399	1-247-883-00	CARBON	150K 5% 1/6W	R458	1-247-855-00	CARBON	10K 5% 1/6W
R400	1-247-867-00	CARBON	33K 5% 1/6W	R459	1-247-831-00	CARBON	1K 5% 1/6W
R401	1-247-868-00	CARBON	36K 5% 1/6W	R460	1-247-863-00	CARBON	22K 5% 1/6W
R402	1-247-866-00	CARBON	30K 5% 1/6W	R461	1-247-863-00	CARBON	22K 5% 1/6W
R403	1-247-832-00	CARBON	1.1K 5% 1/6W	R462	1-247-853-00	CARBON	8.2K 5% 1/6W
R404	1-247-855-00	CARBON	10K 5% 1/6W	R463	1-247-847-00	CARBON	4.7K 5% 1/6W
R405	1-247-855-00	CARBON	10K 5% 1/6W	R472	1-247-871-00	CARBON	47K 5% 1/6W
R407	1-247-850-00	CARBON	6.2K 5% 1/6W	R473	1-247-879-00	CARBON	100K 5% 1/6W
R409	1-247-863-00	CARBON	22K 5% 1/6W	R474	1-247-855-00	CARBON	10K 5% 1/6W
R410	1-247-871-00	CARBON	47K 5% 1/6W	R475	1-247-847-00	CARBON	4.7K 5% 1/6W
R411	1-247-855-00	CARBON	10K 5% 1/6W	R477	1-247-831-00	CARBON	1K 5% 1/6W
R412	1-247-825-00	CARBON	560 5% 1/2W	R478	1-247-855-00	CARBON	10K 5% 1/6W
R413	1-244-870-00	CARBON	750 5% 1/2W	R479	1-247-807-00	CARBON	100K 5% 1/6W
R414	1-247-851-00	CARBON	6.8K 5% 1/6W	R480	1-247-855-00	CARBON	10K 5% 1/6W
R415	1-247-815-00	CARBON	220 5% 1/6W	R481	1-247-855-00	CARBON	10K 5% 1/6W
R416	1-247-827-00	CARBON	680 5% 1/4W	R482	1-247-871-00	CARBON	47K 5% 1/6W
R417	1-247-875-00	CARBON	68K 5% 1/6W	R483	1-247-887-00	CARBON	220K 5% 1/6W
				R484	1-247-795-00	CARBON	33 5% 1/6W
				R485	1-247-871-00	CARBON	47K 5% 1/6W
				R501	1-247-862-00	CARBON	20K 5% 1/6W
				R502	1-247-862-00	CARBON	20K 5% 1/6W

NOTE:

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When indicating parts by reference number, please include the board name.

SS-22

MT-8

TU-47

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R503	1-247-873-00	CARBON	56K 5% 1/6W	TP315	3-846-049-11	PIN, LEAD	
R521	1-247-871-00	CARBON	47K 5% 1/6W	TP501	3-846-049-11	PIN, LEAD	
R522	1-247-827-00	CARBON	680 5% 1/6W	TP503	3-846-049-11	PIN, LEAD	
R523	1-247-855-00	CARBON	10K 5% 1/6W	TP505	3-846-049-11	PIN, LEAD	
R524	1-247-831-00	CARBON	1K 5% 1/6W	*****			
R525	1-247-879-00	CARBON	100K 5% 1/6W	1-611-239-00	MT-8 BOARD		
R526	1-247-879-00	CARBON	100K 5% 1/6W	*****			
R527	1-247-879-00	CARBON	100K 5% 1/6W	TUNER			
R528	1-247-879-00	CARBON	100K 5% 1/6W	TU001	1-463-350-00	TUNER (BT-881)	
R529	1-247-809-00	CARBON	120 5% 1/6W	*****			
R530	1-247-850-00	CARBON	6.2K 5% 1/6W	1-A-6720-179-A	TU-47 BOARD, COMPLETE		
R531	1-247-824-00	CARBON	510 5% 1/6W	*****			
R532	1-247-879-00	CARBON	100K 5% 1/6W	1-3-680-727-00	CASE (MAIN), SHIELD, TUNER		
R533	1-247-861-00	CARBON	18K 5% 1/6W	CAPACITOR			
R534	1-247-847-00	CARBON	4.7K 5% 1/6W	C001	1-123-356-00	ELECT	10MF 20% 50V
R535	1-247-871-00	CARBON	47K 5% 1/6W	C002	1-101-003-00	CERAMIC	0.0047MF 50V
R536	1-247-847-00	CARBON	4.7K 5% 1/6W	C003	1-130-528-51	MYLAR	0.1MF 10% 50V
R537	1-247-831-00	CARBON	1K 5% 1/6W	C004	1-123-318-00	ELECT	33MF 20% 16V
R538	1-247-831-00	CARBON	1K 5% 1/6W	C005	1-101-003-00	CERAMIC	0.0047MF 50V
R539	1-247-831-00	CARBON	1K 5% 1/6W	C006	1-123-318-00	ELECT	33MF 20% 16V
R540	1-247-831-00	CARBON	1K 5% 1/6W	C007	1-123-356-00	ELECT	10MF 20% 16V
R541	1-247-871-00	CARBON	47K 5% 1/6W	C008	1-101-004-00	CERAMIC	0.01MF 50V
R542	1-247-871-00	CARBON	47K 5% 1/6W	C009	1-123-356-00	ELECT	10MF 20% 16V
R551	1-247-855-00	CARBON	10K 5% 1/6W	C010	1-101-004-00	CERAMIC	0.01MF 50V
R552	1-246-473-00	CARBON	1K 5% 1/4W	C011	1-123-328-00	ELECT	4.7MF 20% 25V
R553	1-247-855-00	CARBON	10K 5% 1/6W	C012	1-123-379-00	ELECT	0.47MF 20% 50V
R554	1-246-473-00	CARBON	1K 5% 1/4W	C013	1-101-004-00	CERAMIC	0.01MF 50V
R560	1-247-831-00	CARBON	1K 5% 1/6W	C014	1-101-004-00	CERAMIC	0.01MF 50V
R562	1-247-851-00	CARBON	6.8K 5% 1/6W	C015	1-130-522-51	MYLAR	0.033MF 10% 50V
R563	1-247-841-00	CARBON	2.7K 5% 1/6W	C016	1-101-003-00	CERAMIC	0.0047MF 50V
VARIABLE RESISTOR				C017	1-101-003-00	CERAMIC	0.0047MF 50V
RV301	1-228-750-00	RES, ADJ, CARBON 47K		C018	1-101-004-00	CERAMIC	0.01MF 50V
RV302	1-228-750-00	RES, ADJ, CARBON 47K		C019	1-130-528-51	MYLAR	0.1MF 10% 50V
RV303	1-228-996-00	RES, ADJ, METAL GLAZE 47K		C101	1-102-529-00	CERAMIC	100PF 5% 50V
RV304	1-228-750-00	RES, ADJ, CARBON 47K		C102	1-102-527-00	CERAMIC	82PF 5% 50V
RV305	1-228-991-00	RES, ADJ, METAL GLAZE 2.2K		C103	1-102-865-00	CERAMIC	8PF 0.5PF 50V
RV307	1-228-994-00	RES, ADJ, METAL GLAZE 10K		C104	1-102-523-00	CERAMIC	56PF 5% 50V
RV308	1-228-994-00	RES, ADJ, METAL GLAZE 10K		C105	1-102-529-00	CERAMIC	100PF 5% 50V
RV309	1-228-746-00	RES, ADJ, CARBON 2.2K		C106	1-101-003-00	CERAMIC	0.0047MF 50V
RV310	1-228-991-00	RES, ADJ, METAL GLAZE 2.2K		C107	1-101-003-00	CERAMIC	0.0047MF 50V
THERMISTOR				C108	1-101-003-00	CERAMIC	0.0047MF 50V
TH301	1-800-200-00	THERMISTOR S-3K		C109	1-101-003-00	CERAMIC	0.0047MF 50V
TH302	1-800-202-XX	THERMISTOR S-10K		C110	1-101-003-00	CERAMIC	0.0047MF 50V
TH303	1-800-200-00	THERMISTOR S-3K		C111	1-101-003-00	CERAMIC	0.0047MF 50V
TH304	1-800-202-XX	THERMISTOR S-10K		C112	1-101-003-00	CERAMIC	0.0047MF 50V
POST PIN				C113	1-101-003-00	CERAMIC	0.0047MF 50V
TP302	3-846-049-11	PIN, LEAD		C114	1-101-003-00	CERAMIC	0.0047MF 50V
TP303	3-846-049-11	PIN, LEAD		C115	1-123-318-00	ELECT	33MF 20% 16V
TP312	3-846-049-11	PIN, LEAD					
TP313	3-846-049-11	PIN, LEAD					
TP314	3-846-049-11	PIN, LEAD					

NOTE:

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When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
C116	1-101-003-00	CERAMIC 0.0047MF	50V	D016	=>8-719-912-20	DIODE 1SS120	
C117	1-101-003-00	CERAMIC 0.0047MF	50V	D017	=>8-719-912-20	DIODE 1SS120	
C118	1-101-003-00	CERAMIC 0.0047MF	50V	D018	=>8-719-912-20	DIODE 1SS120	
C119	1-101-003-00	CERAMIC 0.0047MF	50V	D019	=>8-719-912-20	DIODE 1SS120	
C120	1-101-003-00	CERAMIC 0.0047MF	50V	D020	=>8-719-912-20	DIODE 1SS120	
C121	1-102-504-00	CERAMIC 4PF	0.25PF 50V	D021	=>8-719-912-20	DIODE 1SS120	
C122	1-102-504-00	CERAMIC 4PF	0.25PF 50V	D022	=>8-719-912-20	DIODE 1SS120	
C123	1-102-518-00	CERAMIC 33PF	5% 50V	D023	=>8-719-912-20	DIODE 1SS120	
C124	1-102-527-00	CERAMIC 82PF	5% 50V	D024	=>8-719-912-20	DIODE 1SS120	
C125	1-102-518-00	CERAMIC 33PF	5% 50V	D025	=>8-719-912-20	DIODE 1SS120	
C126	1-102-529-00	CERAMIC 100PF	5% 50V	D026	=>8-719-912-20	DIODE 1SS120	
C127	1-101-003-00	CERAMIC 0.0047MF	50V	D027	=>8-719-912-20	DIODE 1SS120	
C128	1-123-380-00	ELECT 1MF	20% 50V	D028	=>8-719-912-20	DIODE 1SS120	
C129	1-101-003-00	CERAMIC 0.0047MF	50V	D029	=>8-719-912-20	DIODE 1SS120	
C130	1-123-318-00	ELECT 33MF	20% 16V	D030	=>8-719-912-20	DIODE 1SS120	
C131	1-123-294-00	ELECT 47MF	20% 6.3V	<u>IC</u>			
C201	1-102-959-00	CERAMIC 22PF	5% 50V	IC001	8-759-101-18	IC UPC1362C	
C202	1-102-959-00	CERAMIC 22PF	5% 50V	IC101	8-759-276-07	IC TA7607AP	
C203	1-101-004-00	CERAMIC 0.01MF	50V	IC201	8-759-193-91	IC UPC1391H	
C204	1-101-004-00	CERAMIC 0.01MF	50V	<u>COIL</u>			
C205	1-101-003-00	CERAMIC 0.0047MF	50V	L001	1-408-615-00	MICRO INDUCTOR 100UH	
C206	1-102-959-00	CERAMIC 22PF	5% 50V	L002	1-408-615-00	MICRO INDUCTOR 100UH	
C207	1-101-004-00	CERAMIC 0.01MF	50V	L101	1-408-591-00	MICRO INDUCTOR 1UH	
C208	1-101-004-00	CERAMIC 0.01MF	50V	L102	1-408-600-00	MICRO INDUCTOR 5.6UH	
C209	1-130-516-51	MYLAR 0.01MF	10% 50V	L103	1-408-600-00	MICRO INDUCTOR 5.6UH	
C210	1-123-380-00	ELECT 1MF	20% 50V	L104	1-408-603-00	MICRO INDUCTOR 10UH	
C211	1-123-318-00	ELECT 33MF	20% 16V	L105	1-408-605-00	MICRO INDUCTOR 15UH	
<u>FILTER</u>				L201	1-408-606-00	MICRO INDUCTOR 18UH	
CF101	1-404-134-00	TRAP, CERAMIC (5.5MHZ)		<u>PRESET UNIT</u>			
CF201	1-527-263-00	CERAMIC FILTER (5.5MHZ)		PS001	1-230-252-00	PRESET UNIT (12CH)	
CF202	1-404-380-00	DISCRIMINATOR, CERAMIC 5.5MHZ		<u>TRANSISTOR</u>			
<u>CONNECTOR</u>				Q001	8-729-900-65	TRANSISTOR DTA144ES	
CN001	1-560-893-00	PIN, CONNECTOR 5P		Q002	=>8-729-245-83	TRANSISTOR 2SC2458	
CN002	1-560-891-00	PIN, CONNECTOR 3P		Q003	=>8-729-245-83	TRANSISTOR 2SC2458	
CN003	1-560-891-00	PIN, CONNECTOR 3P		Q004	8-729-115-30	TRANSISTOR 2SK105A-30	
CN004	1-560-892-00	PIN, CONNECTOR 4P		Q005	8-729-900-65	TRANSISTOR DTA144ES	
<u>DIODE</u>				Q006	8-729-900-65	TRANSISTOR DTA144ES	
D001	=>8-759-157-40	IC UPC574J		Q007	8-729-900-65	TRANSISTOR DTA144ES	
D003	=>8-719-911-19	DIODE 1SS119		Q008	8-729-900-89	TRANSISTOR DTC144ES	
D004	=>8-719-911-19	DIODE 1SS119		Q009	8-729-900-89	TRANSISTOR DTC144ES	
D005	8-719-000-06	DIODE MC921		Q101	8-765-300-00	TRANSISTOR 2SC2009	
D007	=>8-719-912-20	DIODE 1SS120		Q102	8-769-200-30	TRANSISTOR 2SK107-3	
D008	=>8-719-912-20	DIODE 1SS120		Q103	=>8-729-245-83	TRANSISTOR 2SC2458	
D009	=>8-719-912-20	DIODE 1SS120		Q201	=>8-729-245-83	TRANSISTOR 2SC2458	
D010	=>8-719-912-20	DIODE 1SS120		<u>RESISTOR</u>			
D011	=>8-719-912-20	DIODE 1SS120		R001	1-206-666-00	METAL OXIDE 1.2K 5% 2W F	
D012	=>8-719-912-20	DIODE 1SS120		R002	1-247-188-00	CARBON 4.7 5% 1/2W F	
D013	=>8-719-912-20	DIODE 1SS120		R003	1-247-863-00	CARBON 22K 5% 1/6W	
D014	=>8-719-912-20	DIODE 1SS120					
D015	=>8-719-912-20	DIODE 1SS120					

NOTE:

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When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark
R004	1-247-879-00	CARBON 100K 5% 1/6W	
R007	1-247-895-00	CARBON 470K 5% 1/6W	
R008	1-247-883-00	CARBON 150K 5% 1/6W	
R009	1-247-831-00	CARBON 1K 5% 1/6W	
R010	1-247-855-00	CARBON 10K 5% 1/6W	
R011	1-247-901-00	CARBON 820K 5% 1/6W	
R012	1-247-871-00	CARBON 47K 5% 1/6W	
R013	1-247-887-00	CARBON 220K 5% 1/6W	
R014	1-247-895-00	CARBON 470K 5% 1/6W	
R015	1-247-863-00	CARBON 22K 5% 1/6W	
R016	1-247-867-00	CARBON 33K 5% 1/6W	
R017	1-247-855-00	CARBON 10K 5% 1/6W	
R018	1-247-831-00	CARBON 1K 5% 1/6W	
R019	1-247-855-00	CARBON 10K 5% 1/6W	
R020	1-247-831-00	CARBON 1K 5% 1/6W	
R021	1-247-831-00	CARBON 1K 5% 1/6W	
R022	1-247-863-00	CARBON 22K 5% 1/6W	
R023	1-247-863-00	CARBON 22K 5% 1/6W	
R101	1-247-845-00	CARBON 3.9K 5% 1/6W	
R102	1-247-847-00	CARBON 4.7K 5% 1/6W	
R103	1-247-823-00	CARBON 470 5% 1/6W	
R104	1-247-823-00	CARBON 470 5% 1/6W	
R105	1-247-815-00	CARBON 220 5% 1/6W	
R106	1-247-867-00	CARBON 33K 5% 1/6W	
R107	1-247-841-00	CARBON 2.7K 5% 1/6W	
R108	1-247-835-00	CARBON 1.5K 5% 1/6W	
R109	1-247-877-00	CARBON 82K 5% 1/6W	
R110	1-247-895-00	CARBON 470K 5% 1/6W	
R111	1-247-863-00	CARBON 22K 5% 1/6W	
R112	1-247-901-00	CARBON 820K 5% 1/6W	
R113	1-247-831-00	CARBON 1K 5% 1/6W	
R114	1-247-813-00	CARBON 180 5% 1/6W	
R115	1-247-807-00	CARBON 100 5% 1/6W	
R116	1-247-811-00	CARBON 150 5% 1/6W	
R117	1-247-807-00	CARBON 100 5% 1/6W	
R118	1-247-837-00	CARBON 1.8K 5% 1/6W	
R120	1-247-805-00	CARBON 82 5% 1/6W	
R201	1-247-831-00	CARBON 1K 5% 1/6W	
R202	1-247-831-00	CARBON 1K 5% 1/6W	
R204	1-247-817-00	CARBON 270 5% 1/6W	
R205	1-247-821-00	CARBON 390 5% 1/6W	
R206	1-247-847-00	CARBON 4.7K 5% 1/6W	
R207	1-247-799-00	CARBON 47 5% 1/6W	
R208	1-247-861-00	CARBON 18K 5% 1/6W	
R209	1-247-837-00	CARBON 1.8K 5% 1/6W	
R210	1-247-871-00	CARBON 47K 5% 1/6W	
R211	1-247-859-00	CARBON 15K 5% 1/6W	

VARIABLE RESISTOR

RV101	1-228-747-00	RES, ADJ, CARBON 4.7K
RV102	1-228-753-00	RES, ADJ, CARBON 470K

Remark	Ref.No.	Part No.	Description	Remark		
			<u>SWITCH</u>			
	S001	1-516-226-00	SLIDE SWITCH			
	S101	1-516-226-00	SLIDE SWITCH			
			<u>FILTER</u>			
	SF101	1-404-433-00	SAWF			
			<u>TRANSFORMER</u>			
	T002	1-404-068-00	COIL, VIF			
	T003	1-404-068-00	COIL, VIF			
	T004	1-404-203-00	COIL, VIF			
	T005	1-404-203-00	COIL, VIF			
	T006	1-404-207-00	COIL, VIF			
			<u>POST PIN</u>			
	TP001	3-846-049-11	PIN, LEAD			

	▲:A-6722-211-A	PS-28 BOARD, COMPLETE				

	1-533-162-00	HOLDER, FUSE				
	▲:3-680-714-00	HEAT SINK				
	▲:3-680-774-00	HEAT SINK (M)				
	7-685-646-71	SCREW +BVTP	3X8	TYPE2 IT-3		
			<u>CAPACITOR</u>			
	C905	1-130-528-51	MYLAR	0.1MF	10%	50V
	C906	1-130-528-51	MYLAR	0.1MF	10%	50V
	C907	1-125-298-00	ELECT(BLOCK)	10000MF	20%	25V
	C908	1-123-333-00	ELECT	100MF	20%	16V
	C909	1-123-332-00	ELECT	47MF	20%	25V
	C910	1-123-333-00	ELECT	100MF	20%	16V
	C911	1-123-356-00	ELECT	10MF	20%	16V
	C912	1-161-271-00	CERAMIC	100PF	5%	50V
	C913	1-123-332-00	ELECT	47MF	20%	16V
	C914	1-123-333-00	ELECT	100MF	20%	25V
	C915	1-123-332-00	ELECT	47MF	20%	16V
	C916	1-161-271-00	CERAMIC	100PF	5%	50V
	C917	1-123-356-00	ELECT	10MF	20%	16V
	C918	1-123-332-00	ELECT	47MF	20%	16V
	C919	1-161-051-00	CERAMIC	0.01MF	10%	50V
	C920	1-161-051-00	CERAMIC	0.01MF	10%	50V
	C921	1-161-051-00	CERAMIC	0.01MF	10%	50V
	C922	1-161-051-00	CERAMIC	0.01MF	10%	50V
	C923	1-123-327-00	ELECT	4700MF	20%	16V
	C924	1-123-328-00	ELECT	4.7MF	20%	25V
	C925	1-161-271-00	CERAMIC	100PF	5%	50V
	C926	1-123-356-00	ELECT	10MF	20%	25V
	C927	1-123-332-00	ELECT	47MF	20%	16V
	C928	1-161-271-00	CERAMIC	100PF	5%	50V
	C929	1-123-330-00	ELECT	22MF	20%	16V
	C932	1-123-361-00	ELECT	220MF	20%	50V
	C933	1-123-332-00	ELECT	47MF	20%	16V

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
C934	1-123-364-00	ELECT	100MF 20% 50V	<u>RESISTOR</u>			
C935	1-123-356-00	ELECT	10MF 20% 16V	R901	1-246-490-00	CARBON	5.1K 5% 1/4W
C936	1-123-330-00	ELECT	22MF 20% 35V	R902	1-212-934-00	FUSIBLE	1 5% 1/2W F
C937	1-123-332-00	ELECT	47MF 20% 16V	R903	1-246-489-00	CARBON	4.7K 5% 1/4W
C939	1-123-356-00	ELECT	10MF 20% 16V	R904	1-246-473-00	CARBON	1K 5% 1/4W
C940	1-161-051-00	CERAMIC	0.01MF 10% 50V	R905	1-246-475-00	CARBON	1.2K 5% 1/4W
C941	1-123-330-00	ELECT	22MF 20% 16V	R906	1-246-487-00	CARBON	3.9K 5% 1/4W
C942	1-161-051-00	CERAMIC	0.01MF 10% 50V	R907	1-212-948-00	FUSIBLE	3.9 5% 1/2W F
<u>CONNECTOR</u>				R908	1-246-473-00	CARBON	1K 5% 1/4W
CN901	1-560-893-00	PIN, CONNECTOR 5P		R909	1-246-473-00	CARBON	1K 5% 1/4W
CN902	1-560-891-00	PIN, CONNECTOR 3P		R910	1-246-491-00	CARBON	5.6K 5% 1/4W
CN903	1-560-893-00	PIN, CONNECTOR 5P		R911	1-246-493-00	CARBON	6.8K 5% 1/4W
CN904	1-560-891-00	PIN, CONNECTOR 3P		R912	1-246-491-00	CARBON	5.6K 5% 1/4W
CN905	1-560-891-00	PIN, CONNECTOR 3P		R914	1-246-487-00	CARBON	3.9K 5% 1/4W
CN906	1-560-896-00	PIN, CONNECTOR 8P		R915	1-246-473-00	CARBON	1K 5% 1/4W
CN907	1-560-136-00	PLUG, CONNECTOR 4P		R916	1-246-473-00	CARBON	1K 5% 1/4W
CN908	1-508-743-00	PIN, CONNECTOR 5P		R917	1-246-485-00	CARBON	3.3K 5% 1/4W
CN912	1-560-896-00	PIN, CONNECTOR 8P		R918	1-246-477-00	CARBON	1.5K 5% 1/4W
<u>DIODE</u>				R919	1-246-443-00	CARBON	56 5% 1/4W
D905	8-719-101-61	DIODE RD6.2E-L2		R920	1-246-497-00	CARBON	10K 5% 1/4W
D906	=>8-719-200-02	DIODE 10E2		R921	1-246-505-00	CARBON	22K 5% 1/4W
D907	=>8-719-200-02	DIODE 10E2		R922	1-246-443-00	CARBON	56 5% 1/4W
D908	=>8-719-200-02	DIODE 10E2		R930	1-212-958-00	FUSIBLE	10 5% 1/2W F
D909	=>8-719-200-02	DIODE 10E2		R931	1-212-857-00	FUSIBLE	10 5% 1/4W F
D910	8-719-101-36	DIODE RD3.3E-L1		R932	1-246-490-00	CARBON	5.1K 5% 1/4W
D911	8-719-101-36	DIODE RD3.3E-L1		R934	1-246-491-00	CARBON	5.6K 5% 1/4W
D912	=>8-719-911-19	DIODE 1SS119		R935	1-246-487-00	CARBON	3.9K 5% 1/4W
D913	=>8-719-200-02	DIODE 10E2		R936	1-246-473-00	CARBON	1K 5% 1/4W
D914	=>8-719-200-02	DIODE 10E2		R937	1-246-497-00	CARBON	10K 5% 1/4W
D916	8-719-100-94	DIODE RD27E-B2		R938	1-246-477-00	CARBON	1.5K 5% 1/4W
D917	8-719-102-71	DIODE RD5.6-EN2		R939	1-246-488-00	CARBON	4.3K 5% 1/4W
<u>FUSE</u>				R940	1-246-477-00	CARBON	1.5K 5% 1/4W
F902	1-532-237-00	FUSE, TIME-LAG T3.15A 250V		R941	1-246-497-00	CARBON	10K 5% 1/4W
F903	1-532-078-00	FUSE, TIME-LAG T1A 250V		R942	1-246-505-00	CARBON	22K 5% 1/4W
<u>TRANSISTOR</u>				<u>VARIABLE RESISTOR</u>			
Q901	8-729-103-33	TRANSISTOR 2SD1310		RV901	1-228-745-00	RES, ADJ, CARBON 1K	
Q902	=>8-729-245-83	TRANSISTOR 2SC2458		*****			
Q903	=>8-729-245-83	TRANSISTOR 2SC2458		A:6724-332-A TM-46 BOARD, COMPLETE			
Q904	8-729-201-78	TRANSISTOR 2SD1406		*****			
Q905	=>8-729-245-83	TRANSISTOR 2SC2458		3-680-758-02	HOLDER (LEFT), FL TUBE		
Q906	8-729-103-33	TRANSISTOR 2SD1310		3-680-759-02	HOLDER (RIGHT), FL TUBE		
Q907	=>8-729-245-83	TRANSISTOR 2SC2458		<u>CAPACITOR</u>			
Q908	=>8-729-245-83	TRANSISTOR 2SC2458		C101	1-161-013-00	CERAMIC	0.01MF 10% 25V
Q909	=>8-729-245-83	TRANSISTOR 2SC2458		C102	1-123-617-00	ELECT	10MF 20% 16V
Q910	=>8-729-245-83	TRANSISTOR 2SC2458		C103	1-102-975-00	CERAMIC	100PF 10% 50V
Q911	=>8-729-805-13	TRANSISTOR 2SC1475-13		C104	1-102-114-00	CERAMIC	470PF 10% 50V
Q912	=>8-729-245-83	TRANSISTOR 2SC2458					
Q913	8-729-202-02	TRANSISTOR 2SB1015					
Q914	8-729-202-02	TRANSISTOR 2SB1015					

NOTE:

The components identified by shading and mark A are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
<u>COMPOSITION CIRCUIT BLOCK</u>				<u>SWITCH</u>			
CP101	1-232-243-00	COMPOSITION CIRCUIT BLOCK		S101	1-554-174-00	SWITCH, KEY BOARD	
CP102	1-232-385-00	COMPOSITION CIRCUIT BLOCK		S102	1-554-174-00	SWITCH, KEY BOARD	
CP103	1-232-385-00	COMPOSITION CIRCUIT BLOCK		S103	1-554-174-00	SWITCH, KEY BOARD	
CP104	1-232-240-00	COMPOSITION CIRCUIT BLOCK		S104	1-554-174-00	SWITCH, KEY BOARD	
				S105	1-554-174-00	SWITCH, KEY BOARD	
<u>INDICATOR TUBE</u>				S106	1-554-174-00	SWITCH, KEY BOARD	
FL101	1-519-308-00	INDICATOR TUBE, FLUORESCENT		S107	1-554-174-00	SWITCH, KEY BOARD	
FL102	1-519-307-00	INDICATOR TUBE, FLUORESCENT		S108	1-554-174-00	SWITCH, KEY BOARD	
<u>IC</u>				S110	1-553-716-00	SWITCH, SLIDE	
IC101	8-759-102-07	IC UPD552C-107		S111	1-553-716-00	SWITCH, SLIDE	
<u>TRANSISTOR</u>				S112	1-553-716-00	SWITCH, SLIDE	
Q101	8-729-900-63	TRANSISTOR DTA124ES		<u>CRYSTAL</u>			
Q102	8-729-900-63	TRANSISTOR DTA124ES		X101	1-527-532-00	OSCILLATOR, CERAMIC	
Q103	8-729-900-63	TRANSISTOR DTA124ES		*****			
Q104	8-729-900-63	TRANSISTOR DTA124ES		A-6724-333-A TM-47 BOARD, COMPLETE			
Q105	8-729-900-63	TRANSISTOR DTA124ES		*****			
Q106	8-729-900-63	TRANSISTOR DTA124ES		<u>CAPACITOR</u>			
Q107	8-729-245-83	TRANSISTOR 2SC2458		C001	1-161-013-00	CERAMIC	0.01MF 10% 25V
Q108	8-729-245-83	TRANSISTOR 2SC2458		C004	1-102-508-00	CERAMIC	10PF 0.5PF 50V
Q109	8-729-245-83	TRANSISTOR 2SC2458		C005	1-161-013-00	CERAMIC	0.01MF 10% 25V
Q110	8-729-245-83	TRANSISTOR 2SC2458		C006	1-161-013-00	CERAMIC	0.01MF 10% 25V
Q111	8-729-245-83	TRANSISTOR 2SC2458		C007	1-161-013-00	CERAMIC	0.01MF 10% 25V
Q112	8-729-245-83	TRANSISTOR 2SC2458		C008	1-123-617-00	ELECT	10MF 20% 16V
Q113	8-729-245-83	TRANSISTOR 2SC2458		C009	1-161-013-00	CERAMIC	0.01MF 10% 25V
Q114	8-729-245-83	TRANSISTOR 2SC2458		C010	1-125-299-00	DOBLE LAYER	47000MF 5V
Q115	8-729-245-83	TRANSISTOR 2SC2458		C011	1-123-661-00	ELECT	100MF 20% 6.3V
Q116	8-729-204-83	TRANSISTOR 2SA1048-GR		C012	1-161-013-00	CERAMIC	0.01MF 10% 25V
<u>RESISTOR</u>				<u>CONNECTOR</u>			
R101	1-247-879-00	CARBON	100K 5% 1/6W	CN002	1-560-891-00	PIN, CONNECTOR 3P	
R102	1-247-896-00	CARBON	510K 5% 1/6W	CN004	1-560-896-00	PIN, CONNECTOR 8P	
R103	1-247-833-00	CARBON	1.2K 5% 1/6W	CN005	1-560-891-00	PIN, CONNECTOR 3P	
R104	1-247-847-00	CARBON	4.7K 5% 1/6W	CN006	1-560-894-00	PIN, CONNECTOR 6P	
R105	1-247-847-00	CARBON	4.7K 5% 1/6W	CN007	1-560-891-00	PIN, CONNECTOR 3P	
R106	1-247-847-00	CARBON	4.7K 5% 1/6W	CN009	1-560-890-00	PIN, CONNECTOR 2P	
R107	1-247-847-00	CARBON	4.7K 5% 1/6W	<u>TRIMMER</u>			
R108	1-247-847-00	CARBON	4.7K 5% 1/6W	CV001	1-141-179-12	CAP, TRIMMER	
R109	1-247-847-00	CARBON	4.7K 5% 1/6W	<u>DIODE</u>			
R110	1-247-847-00	CARBON	4.7K 5% 1/6W	D001	8-719-908-25	DIODE LTZ-R15	
R111	1-247-847-00	CARBON	4.7K 5% 1/6W	D002	8-719-911-19	DIODE 1SS119	
R112	1-247-847-00	CARBON	4.7K 5% 1/6W	D003	8-719-911-19	DIODE 1SS119	
R113	1-247-847-00	CARBON	4.7K 5% 1/6W	D004	8-719-911-19	DIODE 1SS119	
R114	1-247-847-00	CARBON	4.7K 5% 1/6W	D005	8-719-911-19	DIODE 1SS119	
R115	1-247-783-00	CARBON	10 5% 1/6W	D006	8-719-911-19	DIODE 1SS119	
<u>VARIABLE RESISTOR</u>				D007	8-719-000-06	DIODE MC921	
RV101	1-230-122-00	RES, VAR, CARBON 100K					
RV102	1-230-122-00	RES, VAR, CARBON 100K					

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark
<u>IC</u>			
IC001	8-759-102-05	IC UPD7519G-076	
IC002	8-759-101-14	IC UPD82C43C	
<u>TRANSISTOR</u>			
Q001	8-729-245-83	TRANSISTOR 2SC2458	
Q002	8-729-245-83	TRANSISTOR 2SC2458	
Q003	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q004	8-729-115-30	TRANSISTOR 2SK105A-30	
<u>RESISTOR</u>			
R001	1-247-863-00	CARBON 22K 5% 1/6W	
R002	1-247-863-00	CARBON 22K 5% 1/6W	
R003	1-247-903-00	CARBON 1M 5% 1/6W	
R004	1-247-874-00	CARBON 62K 5% 1/6W	
R005	1-247-867-00	CARBON 33K 5% 1/6W	
R006	1-247-869-00	CARBON 39K 5% 1/6W	
R007	1-247-872-00	CARBON 51K 5% 1/6W	
R008	1-247-879-00	CARBON 100K 5% 1/6W	
R009	1-247-863-00	CARBON 22K 5% 1/6W	
R010	1-247-815-00	CARBON 220 5% 1/6W	
R011	1-247-863-00	CARBON 22K 5% 1/6W	
R012	1-247-839-00	CARBON 2.2K 5% 1/6W	
R013	1-247-854-00	CARBON 9.1K 5% 1/6W	
R014	1-247-872-00	CARBON 51K 5% 1/6W	
R015	1-247-831-00	CARBON 1K 5% 1/6W	
R016	1-247-831-00	CARBON 1K 5% 1/6W	
R017	1-247-831-00	CARBON 1K 5% 1/6W	
R018	1-247-831-00	CARBON 1K 5% 1/6W	
R019	1-247-831-00	CARBON 1K 5% 1/6W	
R020	1-247-831-00	CARBON 1K 5% 1/6W	
R021	1-246-449-00	CARBON 100 5% 1/4W	
R022	1-247-879-00	CARBON 100K 5% 1/6W	
R023	1-247-879-00	CARBON 100K 5% 1/6W	
R024	1-247-879-00	CARBON 100K 5% 1/6W	
R025	1-247-879-00	CARBON 100K 5% 1/6W	
R026	1-247-879-00	CARBON 100K 5% 1/6W	
R027	1-247-879-00	CARBON 100K 5% 1/6W	
R028	1-247-871-00	CARBON 47K 5% 1/6W	
R030	1-247-871-00	CARBON 47K 5% 1/6W	
R031	1-247-871-00	CARBON 47K 5% 1/6W	
R032	1-247-831-00	CARBON 1K 5% 1/6W	
R033	1-247-831-00	CARBON 1K 5% 1/6W	
R034	1-247-831-00	CARBON 1K 5% 1/6W	
R035	1-247-831-00	CARBON 1K 5% 1/6W	
<u>POST PIN</u>			
TP008	3-846-049-11	PIN, LEAD	
<u>CRYSTAL</u>			
X001	1-567-121-00	VIBRATOR, CRYSTAL	

Ref.No.	Part No.	Description	Remark
A-6724-334-A FS-30 BOARD, COMPLETE *****			
3-680-756-00 HOLDER, LED, 8 GANG			
<u>CAPACITOR</u>			
C401	1-123-607-00	ELECT 0.1MF 20% 50V	
<u>CONNECTOR</u>			
CN401	1-564-031-00	PIN, CONNECTOR 6P	
CN402	1-564-031-41	PIN, CONNECTOR 6P	
<u>DIODE</u>			
D401	8-719-930-50	DIODE GL-3NG5	
D402	8-719-930-05	DIODE GL-3HY5	
D403	8-719-930-05	DIODE GL-3HY5	
D404	8-719-906-47	DIODE GL-9NP2	
D405	8-719-906-47	DIODE GL-9NP2	
D406	8-719-906-47	DIODE GL-9NP2	
D407	8-719-906-47	DIODE GL-9NP2	
D408	8-719-906-47	DIODE GL-9NP2	
D409	8-719-906-47	DIODE GL-9NP2	
D410	8-719-906-47	DIODE GL-9NP2	
D411	8-719-906-47	DIODE GL-9NP2	
D412	8-719-911-19	DIODE 1SS119	
D413	8-719-000-04	DIODE MC911	
D414	8-719-000-04	DIODE MC911	
D415	8-719-000-04	DIODE MC911	
D416	8-719-930-50	DIODE GL-3NG5	
<u>IC</u>			
IC401	8-759-600-83	IC M50761-633P	
<u>TRANSISTOR</u>			
Q401	8-729-900-63	TRANSISTOR DTA124ES	
Q402	8-729-900-63	TRANSISTOR DTA124ES	
Q403	8-729-900-63	TRANSISTOR DTA124ES	
Q404	8-729-900-36	TRANSISTOR DTC124ES	
Q405	8-729-900-36	TRANSISTOR DTC124ES	
Q406	8-729-900-36	TRANSISTOR DTC124ES	
Q407	8-729-900-36	TRANSISTOR DTC124ES	
Q408	8-729-900-36	TRANSISTOR DTC124ES	
Q409	8-729-900-36	TRANSISTOR DTC124ES	
Q410	8-729-900-36	TRANSISTOR DTC124ES	
Q411	8-729-900-36	TRANSISTOR DTC124ES	
Q412	8-729-900-63	TRANSISTOR DTA124ES	
Q413	8-729-900-63	TRANSISTOR DTA124ES	
Q414	8-729-900-36	TRANSISTOR DTC124ES	
Q415	8-729-900-63	TRANSISTOR DTA124ES	
Q416	8-729-900-36	TRANSISTOR DTC124ES	

When indicating parts by reference number, please include the board name.

Ref.No. Part No. Description

RESISTOR

R401	1-247-815-00	CARBON	220	5%	1/6W
R402	1-247-815-00	CARBON	220	5%	1/6W
R403	1-247-815-00	CARBON	220	5%	1/6W
R404	1-247-815-00	CARBON	220	5%	1/6W
R405	1-247-819-00	CARBON	330	5%	1/6W

R406	1-247-815-00	CARBON	220	5%	1/6W
R407	1-247-819-00	CARBON	330	5%	1/6W
R408	1-247-815-00	CARBON	220	5%	1/6W
R409	1-247-819-00	CARBON	330	5%	1/6W
R410	1-247-815-00	CARBON	220	5%	1/6W

R411	1-247-819-00	CARBON	330	5%	1/6W
R412	1-247-815-00	CARBON	220	5%	1/6W
R413	1-247-819-00	CARBON	330	5%	1/6W
R414	1-247-815-00	CARBON	220	5%	1/6W
R415	1-247-819-00	CARBON	330	5%	1/6W

R416	1-247-815-00	CARBON	220	5%	1/6W
R417	1-247-819-00	CARBON	330	5%	1/6W
R418	1-247-815-00	CARBON	220	5%	1/6W
R419	1-247-819-00	CARBON	330	5%	1/6W
R420	1-247-815-00	CARBON	220	5%	1/6W

R421	1-247-879-00	CARBON	100K	5%	1/6W
R422	1-247-855-00	CARBON	10K	5%	1/6W
R423	1-247-855-00	CARBON	10K	5%	1/6W
R424	1-247-855-00	CARBON	10K	5%	1/6W
R425	1-247-855-00	CARBON	10K	5%	1/6W

R426	1-247-855-00	CARBON	10K	5%	1/6W
R427	1-247-855-00	CARBON	10K	5%	1/6W
R428	1-247-855-00	CARBON	10K	5%	1/6W
R429	1-247-855-00	CARBON	10K	5%	1/6W
R430	1-247-831-00	CARBON	1K	5%	1/6W

SWITCH

S401	1-554-174-00	SWITCH, KEY BOARD
S402	1-554-174-00	SWITCH, KEY BOARD
S403	1-554-174-00	SWITCH, KEY BOARD
S404	1-554-174-00	SWITCH, KEY BOARD
S405	1-554-174-00	SWITCH, KEY BOARD

S406	1-554-174-00	SWITCH, KEY BOARD
S407	1-554-174-00	SWITCH, KEY BOARD
S408	1-554-174-00	SWITCH, KEY BOARD

▲:A-6724-356-A TS-38 BOARD, COMPLETE

CAPACITOR

C001	1-130-495-00	MYLAR	0.1MF	5%	50V
C002	1-123-354-00	ELECT	3.3MF	20%	50V
C003	1-130-495-00	MYLAR	0.1MF	5%	50V
C004	1-123-369-00	ELECT	4.7MF	20%	50V
C005	1-123-356-00	ELECT	10MF	20%	50V

Remark

Ref.No. Part No.

Description

Remark

C006	1-123-379-00	ELECT	0.47MF	20%	50V
C007	1-161-013-00	CERAMIC	0.01MF	10%	25V
C008	1-123-354-00	ELECT	3.3MF	20%	50V
C009	1-123-354-00	ELECT	3.3MF	20%	50V

CONNECTOR

CN001	▲:1-564-036-11	PIN, CONNECTOR	11P
CN002	▲:1-564-034-11	PIN, CONNECTOR	9P
CN003	▲:1-564-031-00	PIN, CONNECTOR	6P

DIODE

D001	8-719-901-33	DIODE 1SS133
D002	8-719-911-19	DIODE 1SS119
D003	8-719-000-06	DIODE MC921
D004	8-719-000-06	DIODE MC921
D005	8-719-000-06	DIODE MC921
D006	8-719-000-06	DIODE MC921
D007	8-719-000-06	DIODE MC921
D008	8-719-000-06	DIODE MC921

IC

IC001	8-759-145-28	IC UPD4528BC
IC002	8-759-145-28	IC UPD4528BC
IC003	8-759-140-11	IC UPD4011BC
IC004	8-759-618-48	IC M51848L
IC005	8-759-145-28	IC UPD4528BC

TRANSISTOR

Q001	8-729-900-36	TRANSISTOR DTC124ES
Q002	8-729-900-36	TRANSISTOR DTC124ES
Q003	8-729-900-36	TRANSISTOR DTC124ES
Q004	8-729-900-36	TRANSISTOR DTC124ES
Q005	8-729-900-36	TRANSISTOR DTC124ES
Q006	8-729-900-36	TRANSISTOR DTC124ES
Q007	⇒8-729-245-83	TRANSISTOR 2SC2458
Q008	8-729-900-65	TRANSISTOR DTA144ES
Q009	8-729-900-36	TRANSISTOR DTC124ES
Q010	8-729-900-63	TRANSISTOR DTA124ES

RESISTOR

R001	1-247-889-00	CARBON	270K	5%	1/6W
R002	1-247-879-00	CARBON	100K	5%	1/6W
R003	1-247-879-00	CARBON	100K	5%	1/6W
R004	1-247-889-00	CARBON	270K	5%	1/6W
R005	1-247-895-00	CARBON	470K	5%	1/6W
R006	1-247-895-00	CARBON	470K	5%	1/6W
R007	1-247-889-00	CARBON	270K	5%	1/6W
R008	1-247-871-00	CARBON	47K	5%	1/6W
R009	1-247-875-00	CARBON	68K	5%	1/6W
R010	1-247-855-00	CARBON	10K	5%	1/6W
R011	1-247-887-00	CARBON	220K	5%	1/6W
R012	1-247-887-00	CARBON	220K	5%	1/6W
R013	1-247-887-00	CARBON	220K	5%	1/6W
R014	1-247-855-00	CARBON	10K	5%	1/6W

When indicating parts by reference number, please include the board name.

TS-38

CS-3

CS-4

N

LM-8

RD-6

RD-7

FS-31

FU-18

Ref.No.	Part No.	Description	Remark
<u>VARIABLE RESISTOR</u>			
RV001	1-228-752-00	RES, ADJ, CARBON 220K	

<u>CS-3 BOARD</u>			

<u>CONNECTOR</u>			
CN301	1-564-029-00	PIN, CONNECTOR 4P	
<u>SWITCH</u>			
S301	1-554-241-00	SWITCH, LEVER	

<u>CS-4 BOARD</u>			

<u>SWITCH</u>			
S302	1-554-241-00	SWITCH, LEVER	

1-606-794-00	N BOARD		

<u>CAPACITOR</u>			
C001	1-123-617-00	ELECT 10MF 20% 16V	
C002	1-123-617-00	ELECT 10MF 20% 16V	
C003	1-123-617-00	ELECT 10MF 20% 16V	
C004	1-161-019-00	CERAMIC 0.033MF 10% 25V	
C005	1-108-567-00	MYLAR 0.0033MF 5% 50V	
C006	1-123-821-00	ELECT 47MF 20% 16V	
<u>DIODE</u>			
D001	8-719-110-32	DIODE PH302B	
<u>IC</u>			
IC001	8-759-113-73	IC UPC1373H	
<u>COIL</u>			
L001	1-404-310-00	COIL	

1-605-071-22	LM-8 BOARD		

<u>CAPACITOR</u>			
C101	1-161-057-00	CERAMIC 0.033MF 10% 50V	
C102	1-161-057-00	CERAMIC 0.033MF 10% 50V	

Ref.No.	Part No.	Description	Remark
<u>COIL</u>			
L101	1-408-120-00	MICRO INDUCTOR 18UH	
L102	1-408-120-00	MICRO INDUCTOR 18UH	
<u>RESISTOR</u>			
R101	1-206-479-00	METAL OXIDE 47 5% 2W F	

1-610-401-00	RD-6 BOARD		

1-681-157-00	HOLDER, RD		
<u>DIODE</u>			
D001	8-719-921-03	DIODE GP-2S02B	

1-610-402-00	RD-7 BOARD		

<u>DIODE</u>			
D001	8-719-921-03	DIODE GP-2S02B	

1-611-233-00	FS-31 BOARD		

<u>SWITCH</u>			
S110	1-554-174-00	SWITCH, KEY BOARD	
S111	1-554-174-00	SWITCH, KEY BOARD	

1-611-237-00	FU-18 BOARD		

1-553-162-00	HOLDER, FUSE		
1-535-443-00	PIN, TERMINAL (AC CORD)		
<u>CAPACITOR</u>			
C901	1-130-710-00	FILM 0.1MF 20% 250V	
C902	1-130-710-00	FILM 0.1MF 20% 250V	
<u>FUSE</u>			
F901	1-532-203-00	FUSE, TIME-LAG T2A 250V	
<u>COIL</u>			
L901	1-421-446-00	COIL, CHOKE	

NOTE:

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

VS-2

PS-31

PS-38

Ref.No.	Part No.	Description	Remark
	▲:1-611-236-00	PS-31 BOARD *****	
	<u>IC</u>		
IC901	8-749-953-24	IC STK5324	

	▲:1-611-240-00	PS-38 BOARD *****	
	<u>CAPACITOR</u>		
C903	1-102-394-00	CERAMIC	250V
C904	1-102-394-00	CERAMIC	250V
	<u>DIODE</u>		
D901	8-719-505-20	DIODE S5VB20	

	▲:1-611-242-00	VS-2 BOARD (E MODEL) *****	
S905	▲1-552-304-00	SWITCH, VOLTAGE SELECTOR	

	<u>MISCELLANEOUS</u> *****		
	▲1-464-293-11	MODULATOR, RF BOOSTER (RFU-811)	
	▲1-534-817-XX	CORD, POWER	
	▲:1-555-110-00	CABLE, PIN	
	8-825-508-10	HEAD, FE	
L901	1-464-286-00	SENSOR, S COIL	
L902	1-464-250-00	SENSOR, T COIL	
M901	1-541-163-00	MOTOR	
M902	8-838-048-01	MOTOR, DC (BHF-1908A)	
S903	1-553-539-00	SWITCH, MICRO (LOADING END)	
S904	1-553-718-00	SWITCH, MICRO (UNLOADING END)	
PM901	▲1-454-348-31	SOLENOID, BRAKE PLUNGER	
PM902	▲1-454-349-00	SOLENOID, PLUNGER	
S901	1-554-374-00	SWITCH, LEVER (REC PROOF)	
S902	1-554-374-00	SWITCH, LEVER (CASSETTE IN)	
T901	▲1-447-715-00	TRANSFORMER, POWER (AEP MODEL)	
T901	▲1-447-718-11	TRANSFORMER, POWER (E MODEL)	

ACCESSORIES AND PACKING MATERIALS *****

Part No.	Description	Remark
A-6765-225-A	COMMANDER ASSY (A) (RMT-220) (AEP MODEL)	
A-6765-199-A	COMMANDER ASSY (RMT-216) (E MODEL)	
1-551-513-00	CABLE, COAXIAL ASSY	
1-556-893-00	CORD ASSY, COAXIAL	
3-656-301-00	SCREWDRIVER, CONTROL	
3-680-003-01	BOSS, T TAPE GUIDE (E MODEL)	
3-680-777-00	LID, ACCESSORY CASE	
3-680-778-00	CASE, ACCESSORY	
3-680-775-00	CUSHION (UPPER)	
3-680-776-00	CUSHION (LOWER)	
3-680-784-00	INDIVIDUAL CARTON (AEP MODEL)	
3-683-003-00	INDIVIDUAL CARTON (E MODEL)	
3-681-190-00	SHEET (LARGE), PROTECTION	
3-773-666-11	MANUAL INSTRUCTION (AEP MODEL)	
3-773-666-41	MANUAL INSTRUCTION (AEP MODEL)	
3-773-666-51	MANUAL INSTRUCTION (E MODEL)	

NOTE:

The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

RMT-220

SERVICE MANUAL

AEP Model



SPECIFICATIONS

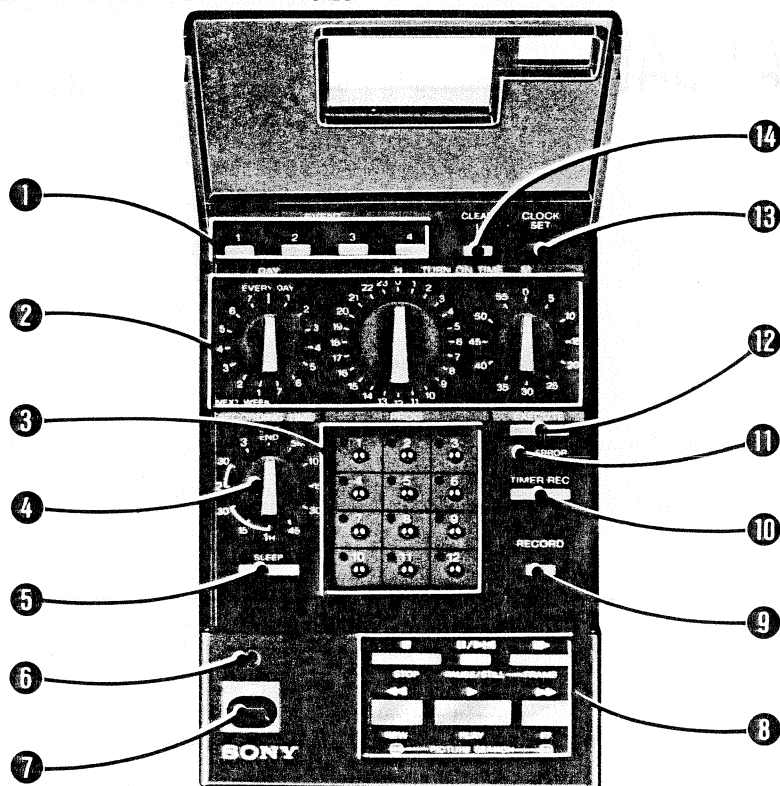
Remote control system	Infrared control
Power requirements	4.5V dc, 3 IEC designation R6 batteries (size AA)
Dimensions	Approx. 106 × 37.3 × 155.5 mm (w/h/d) (4 1/4 × 1 1/2 × 6 1/8 inches)
Weight	incl. projecting parts and controls Approx. 325 g (12 oz) incl. batteries

REMOTE CONTROL UNIT
SONY®

1-1. LOCATION AND FUNCTION OF CONTROLS

Panel lid opened.

RMT-220



1 EVENT number buttons and lamps

Select the event to be set for the timer recording. The lamp will light.

2 DAY and TURN ON TIME dials

Sets the clock and the day of a timer-activated recording. Sets the day of the week and the hours (H) and minutes (M). The M dial has 5-minute segments.

3 PROG (programme) number buttons and lamps

Press to select the TV programme to be viewed or recorded.

4 RECORDING TIME dial

The recording duration can be set to 5, 10, 15, 30 and 45 minutes, 1 hour, 1 hour 15 minutes, 1 hour 30 minutes, 2 hours, 2 hours 30 minutes, 3 hours and to TAPE END.

5 SLEEP button

Functions only for recording. Select the desired TV programme and recording duration with RECORDING TIME dial, then press RECORD and SLEEP. When recording is finished, it will stop automatically and the power will be shut off.

6 Remote function indicator

Lights up when any of the buttons on the Commander is pressed.

7 ON button

Press to turn the recorder on. To turn it off (standby), press again.

8 Function buttons

All buttons function the same as the recorder's buttons.

▶ **PLAY button**: Press to play the tape back. The lamp lights up.

◀◀ **REW button**: Press to rewind the tape. Also used for the reverse picture search and skip scan operation.

▶▶ **FF button**: Press to advance the tape rapidly. Also used for the forward picture search and skip scan operation.

■ **STOP button**: Press to stop the tape.

⏸ **PAUSE/STILL button**: Press to stop the tape for a moment during recording or playback. The lamp lights up. A still picture will be seen during playback. Press again to release the pause mode.

⏮ **FRAME button**: For frame-by-frame forward playback, press ⏮ **PAUSE/STILL** and then ⏮ **FRAME**.

9 RECORD button

Press to start recording. Functions the same as the recorder's button.

10 TIMER REC button

Press to set the recorder in the timer recording standby mode. To deactivate the timer recording, press again.

11 ERROR lamp

When EXECUTE is pressed but no programme number button has been selected, this lamp will light.

12 EXECUTE button

Press to memorize and display the timer recording settings on the lower indication window.

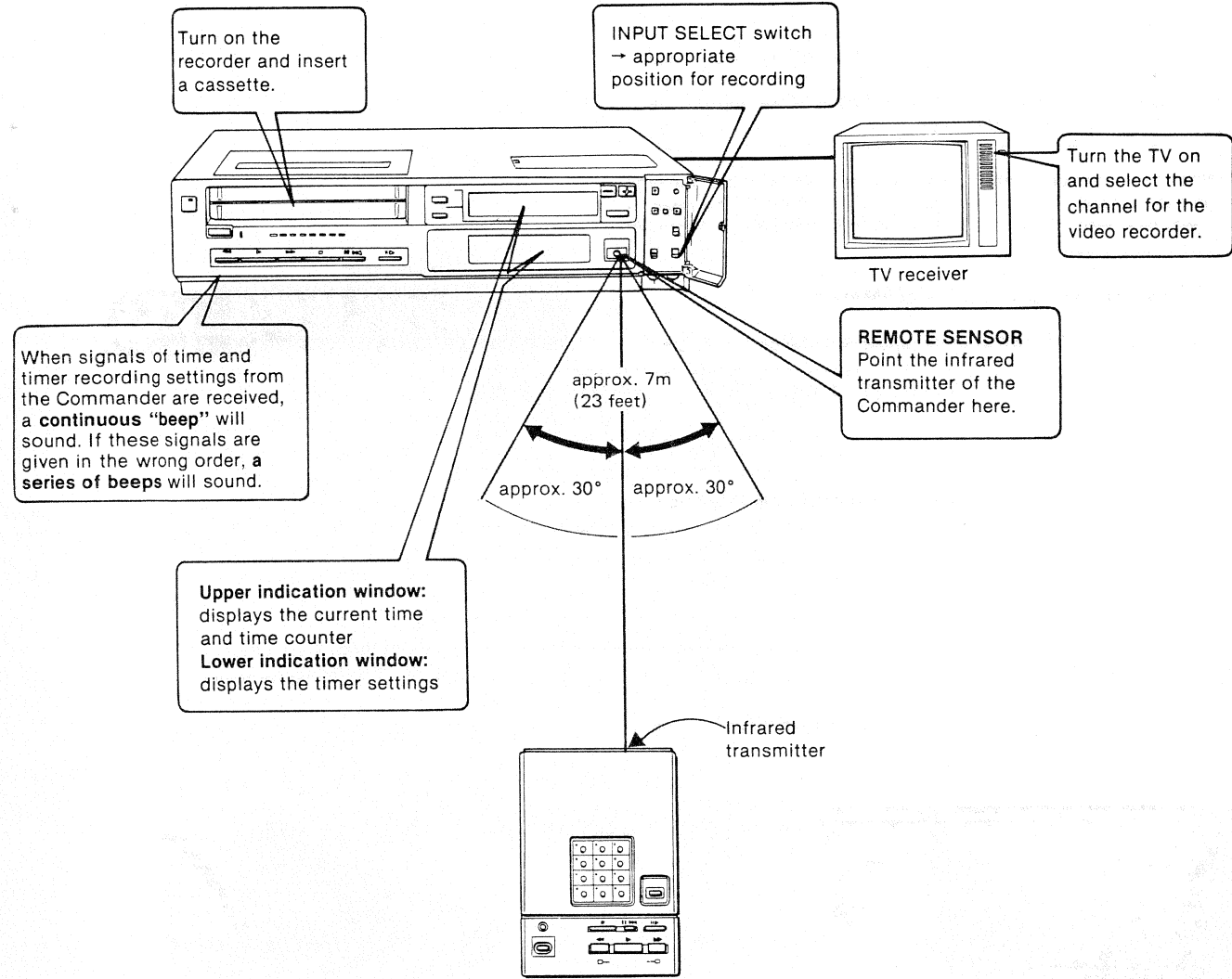
13 CLOCK SET button

Press to activate the clock after the time has been set.

14 CLEAR button

Press to clear the timer programme from the memory. Functions the same as the recorder's button.

1-2. REMOTE OPERATION



Notes

- There should be no obstacles between the Commander and the REMOTE SENSOR of the recorder.
- The shorter the distance between the Commander and the recorder, the wider the angle within which the recorder can be controlled.

1-3. CLOCK SETTING

Connect the mains lead to a wall outlet. Two blinking dots indicate that the clock is ready to be set.

Please note that the clock setting on the recorder provides one-minute segment while the Commander only allows settings at five-minute intervals. For the clock setting on the recorder, refer to the next page.

When power has been interrupted for more than 3 minutes, the time indication "0:00" blinks, showing that the clock must be reset. If power has been interrupted for less than 3 minutes, the displayed time remains correct.

CLOCK SETTING ON THE COMMANDER

DAY dial and its indication in the upper window on the recorder

For	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Set to	1	2	3	4	5	6	7
in window	1	2	3	4	5	6	7

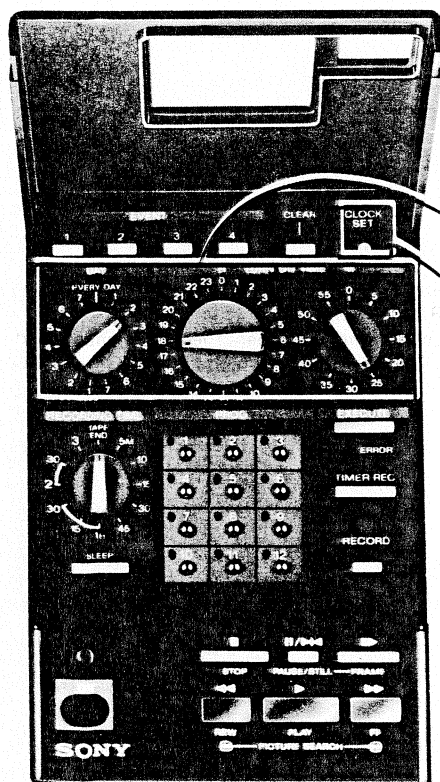
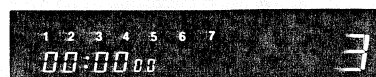
TURN ON TIME H (for HOUR) dial and its indication in the upper window

For	AM		PM		
	12:00 midnight	1:00	12:00 noon	1:00	11:00
Set to	0	1	12	13	23
in window	0:00	1:00	12:00	13:00	23:00

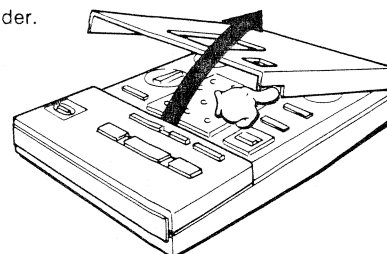
H for hours.
M for minutes.

Example: set for Tuesday evening at 6:25 (hypothetically current time)

Upper indication window



1 Open the panel lid of the Commander.



2 Dial DAY to 2, H to 18 and M to 25. Make sure that each dial setting clicks at the desired position.

3 Pointing the Commander toward REMOTE SENSOR on the recorder, press CLOCK SET by using a pencil or similar object with broadcast time signal.

The time will be displayed in the upper indication window with a "beep" and now the clock activates.



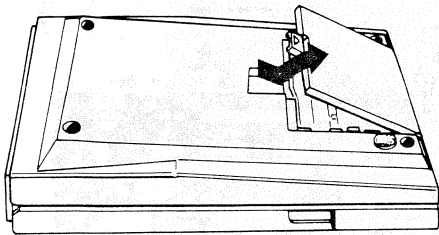
The upper dot blinks for the first half of each minute, and the lower dot for the second half.

1-4. USAGE OF THE COMMANDER

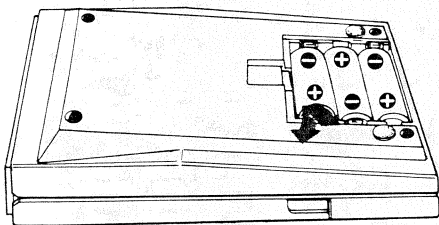
The Remote Commander makes it possible to operate all the functions of the video cassette recorder, including timer-activated recording, from your armchair.

BATTERY INSERTION

1 Open the battery compartment.



2 Insert three IEC designation R6 batteries (size AA) with correct polarity.



3 Close the compartment firmly.

Notes on the Remote Commander

- Avoid dropping foreign objects into the cabinet, particularly when replacing batteries.
- Keep the Commander away from extremely hot or humid places.
- Avoid mechanical shock to the unit.
- This Commander may be used only with this video cassette recorder.

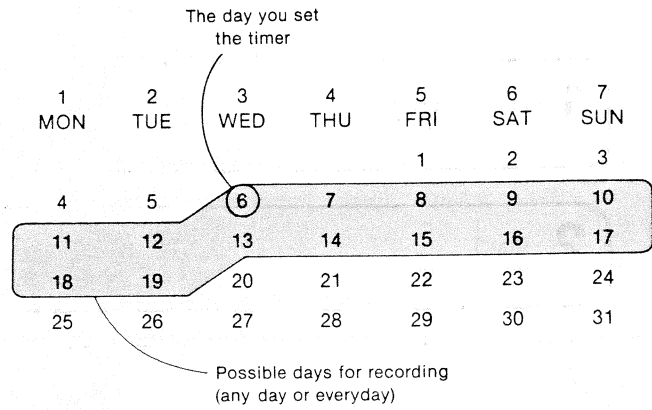
Battery life

In normal operation, batteries will last for about six months. If the range of the Remote Commander becomes noticeably short, replace the batteries with new ones. When the batteries are exhausted, the remote function indicator will not light when the buttons on the Commander are pressed.

If the Commander is not to be used for a long period of time, remove the batteries to avoid possible damage from battery leakage.

1-5. TIMER-ACTIVATED RECORDING

Four recordings can be preset for any two week period. These recordings are identified as EVENT 1, 2, 3 and 4.



CHECK BEFORE SETTING THE TIMER:

- Is the clock correctly set?
- Is the tape long enough to record the programmes?
- Is a cassette inserted in the compartment?

Make sure that the CASSETTE INSIDE lamp lights up.

- Is the INPUT SELECT switch set to TUNER?

If not, the alarm will sound when TIMER REC is pressed.

- Does the cassette have a safety tab on the bottom?

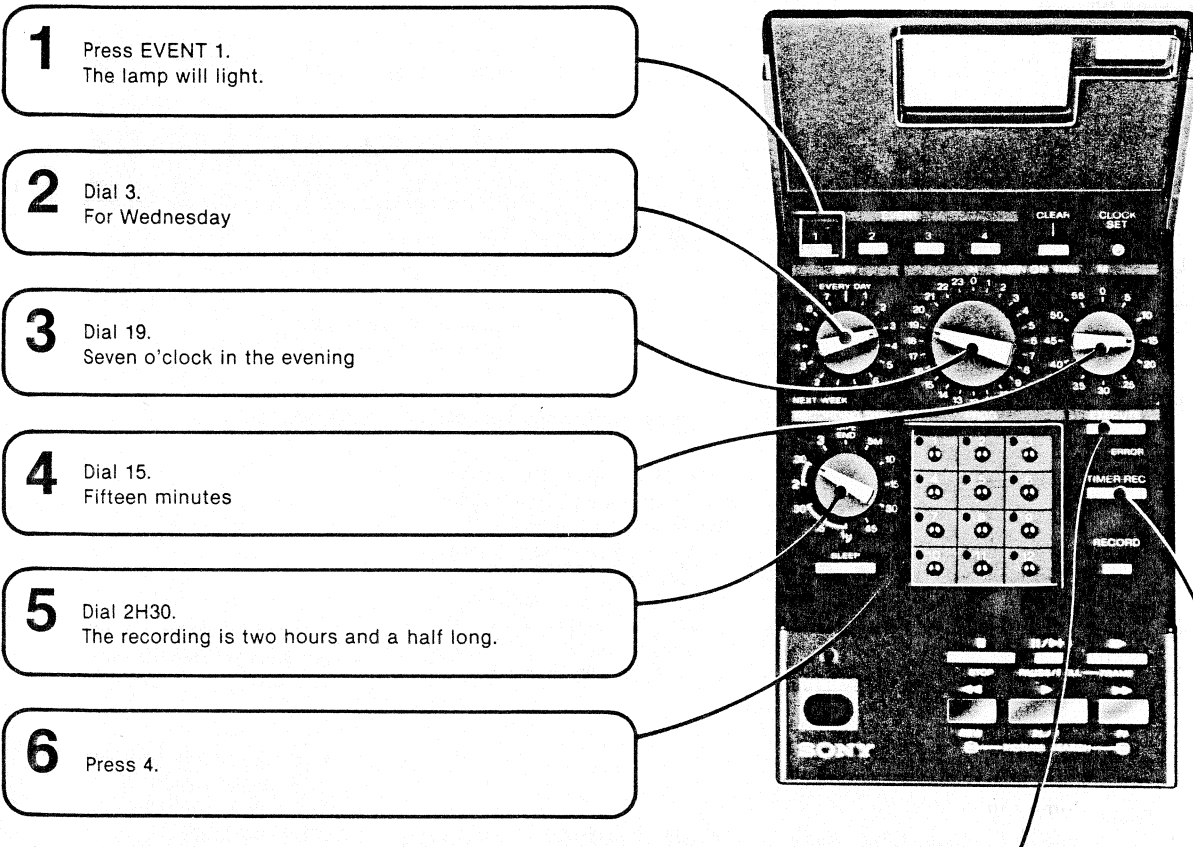
If not, the cassette will be ejected automatically when you press the TIMER REC button. If the recorder is off, the alarm will sound when you press the TIMER REC button.

In timer-activated recordings, the tape will not be rewind automatically.

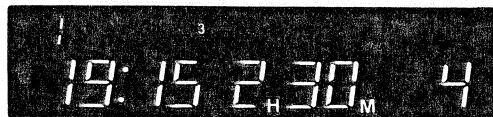
1-6. TIMER-ACTIVATED RECORDING ON THE COMMANDER

Suppose you want to first make a recording (EVENT 1) of a programme on Channel 4 from 7:15 to 9:45 on Wednesday evening.

Make sure that each dial setting clicks at the desired position.



- 7** Pointing the Commander toward REMOTE SENSOR on the recorder, press EXECUTE. A "beep" will sound indicating that the timer settings are being displayed in the lower indication window on the recorder.



Repeat steps **1** to **7** for event 2, 3 and 4.

- 8** Press TIMER REC. A "beep" will sound. **TIMER REC** appears in the lower indication window. The recorder is on the standby mode.



At the preset time recording will start automatically and will stop when the time set has lapsed.

If you forget to select the programme number before pressing EXECUTE, the ERROR lamp and all the PROG number lamps will flash. If this happens, press any PROG number button while the lamps are still flashing, then press EXECUTE again.

To check the timer setting

Press EVENT 1, 2, 3 or 4 to be checked.

The timer setting will be displayed respectively in the indication window.

To reset the timer setting of an event

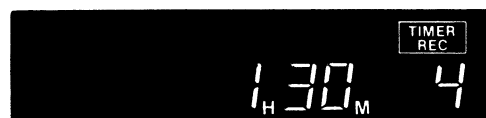
1. Press TIMER REC to release it.
2. Select event to be reset.
3. Reset the event.
4. Press TIMER REC.



MANUAL RECORDING WITH AUTOMATIC STOP

By pressing the SLEEP and RECORD buttons on the Commander, a timer recording starts instantly.

1. Select the TV programme and recording duration with the RECORDING TIME dial.
 2. Press SLEEP and RECORD in any sequence.
- A "beep" sound will indicate that the recording duration has been set in the lower indication window:



If the alarm sounds when the signals from the Commander are transmitted to the detector, repeat steps 1 and 2.

The recorder will automatically turn off and the memory will be erased when the recording is finished. To cancel the sleep function while recording, press the TIMER REC button.

If you want to erase the memory of an event and leave that event blank

1. Select the event to be erased.
2. Press CLEAR.

The timer programme for this event will be erased from the memory. Indication shows "---:---H---M---".

Repeat steps 1 and 2 if you desire to erase any other events.

To activate the timer recording for the remaining events, press TIMER REC.

DIAL INDICATIONS ON THE COMMANDER AND WINDOW INDICATIONS ON THE RECORDER

EVERY DAY on the DAY dial

If you want to make a recording for consecutive days at the same time on the same channel for the same recording duration, set the day dial to the EVERY DAY setting.

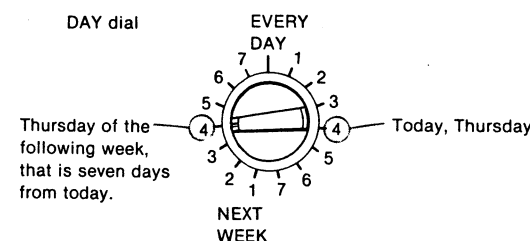


NEXT WEEK on the DAY dial

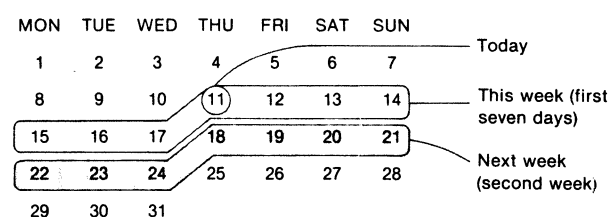


The numbers on the NEXT WEEK half of the dial in light blue correspond to the days set on the other side.

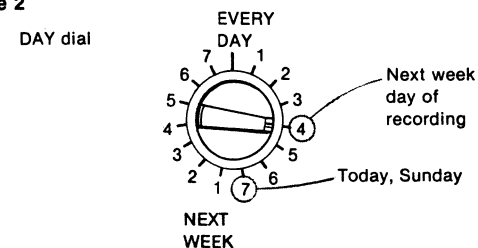
Example 1



If today is Thursday, and the dial is set to 4 on the NEXT WEEK (the other side of the dial), the recording will take place on Thursday of the following week (seven days from today).



Example 2



If today is Sunday, August 14, and you want to record a programme on Thursday, August 25, the dial must be set to 4 on the right side of the dial (to show the passage of eleven days).

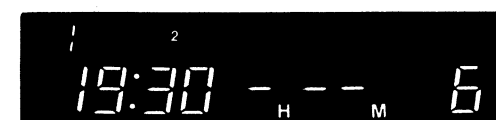
AN EASY WAY TO DETERMINE THE CORRECT SETTING FOR A PROGRAMME:

Count the number of days between today and the desired day of recording and then, count out the same number of settings on the dial. **Be sure to skip the EVERY DAY setting.**

In example 2, if you want to make a recording 11 days after Sunday, August 14 (today), count out 11 settings after the number "7".

TAPE END on the RECORDING TIME dial

To record the entire tape, set to TAPE END.



At the end of the tape the recorder will be turned off.

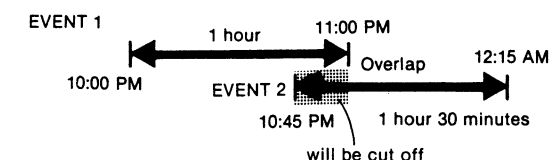
ONCE THE TIMER REC LAMP HAS LIT UP, NO FUNCTION OF THE RECORDER CAN BE ACTIVATED, except for checking the timer setting.

To operate the recorder after setting the timer for recording, press the TIMER REC button so that the TIMER REC lamp goes off. To reactivate the timer recording standby mode, be sure to press the TIMER REC button again.

1-7. SPECIFIC NOTES ON TIMER-ACTIVATED RECORDINGS

WHEN THE PRESETTINGS OF YOUR TIMER-ACTIVATED RECORDINGS OVERLAP

There will be no error indication to inform you of the overlap. Even if there is an overlap, recording will be made.



In this case, when the first recording is completely finished, the recording of the following programme will begin. Consequently, the programme preset for the later time will be cut off in the beginning of its recording.

WHEN A POWER INTERRUPTION OCCURS DURING TIMER RECORDING (INCLUDES THE SLEEP TIMER)

If the clock shows "0:00" and blinks

All the timer settings have been erased. Reset the clock time and timer settings.

If the dots blink but the clock still shows the correct time

The power has been interrupted for less than 3 minutes. Press the ON/STANDBY button to stop the blinking.

The timer set programmes have been retained in the memory and the ongoing timer recording will resume when the power is restored.

If the power is restored within 3 minutes, you cannot release the sleep function immediately by pressing the TIMER REC button. Wait one minute before pressing the button.

If the sleep timer recording is in progress, the sleep timer setting indication will not disappear;

- a. even if the recorder has been turned off because the recording has been completed.
- b. when the tape reaches its end and the recorder will not be turned off.

If the power interruption occurs when timer recording is finishing, the clock will not indicate any power interruption. The recorder will be turned on when the power is restored and will remain on.

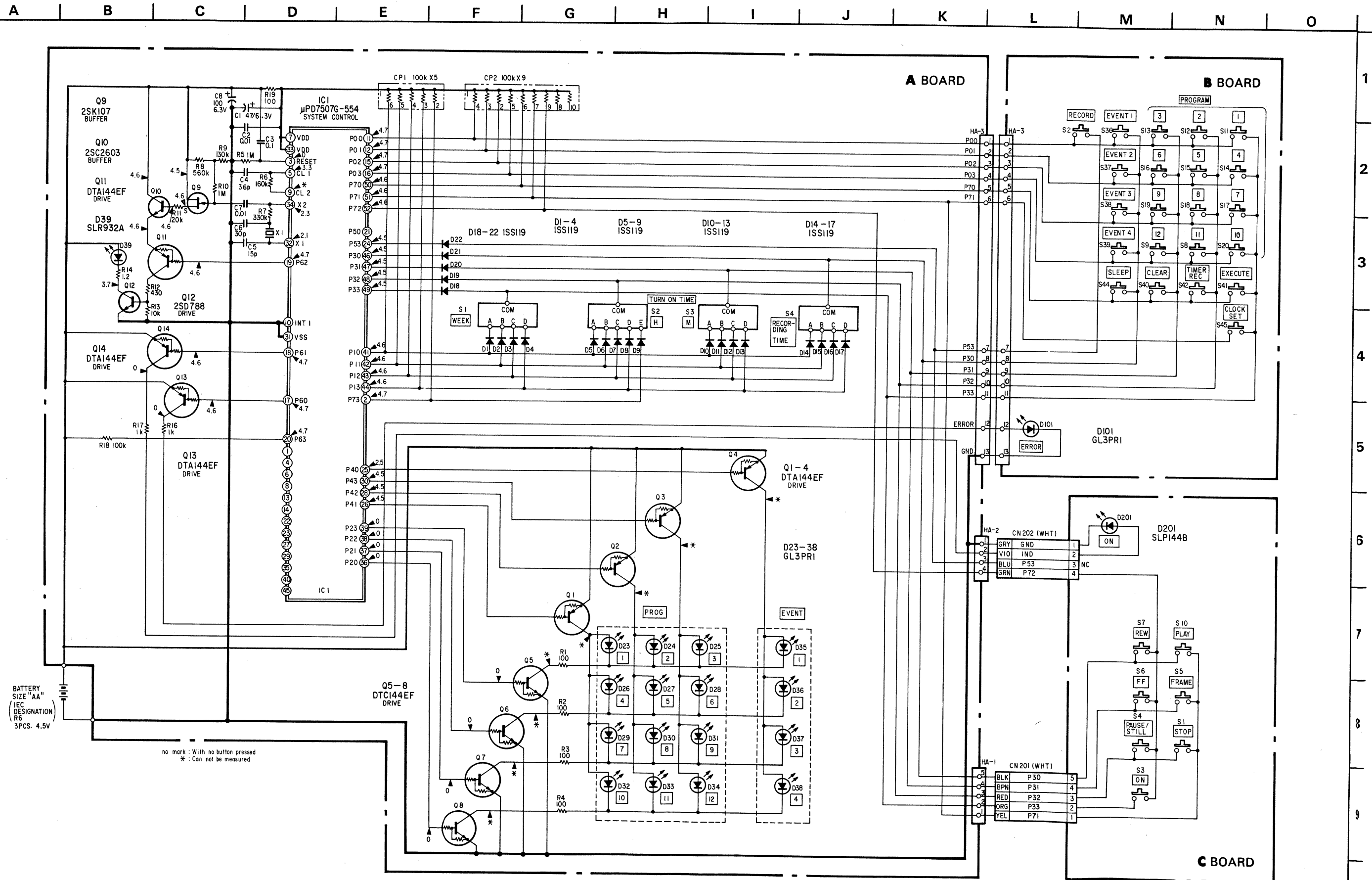
WHEN THE TIMER-ACTIVATED RECORDING IS FINISHED

1 Press the ON/STANDBY button and rewind the tape by pressing the REW button.

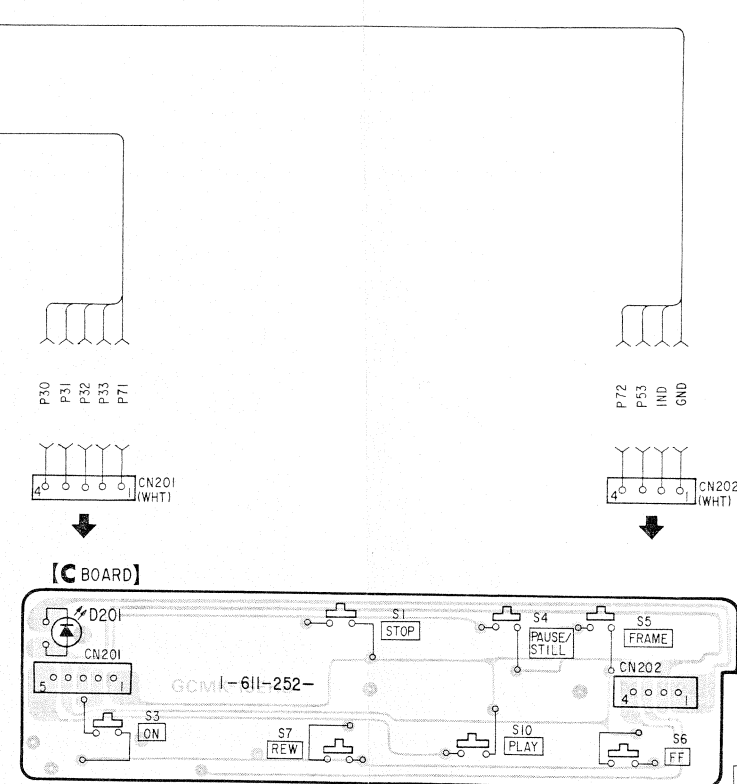
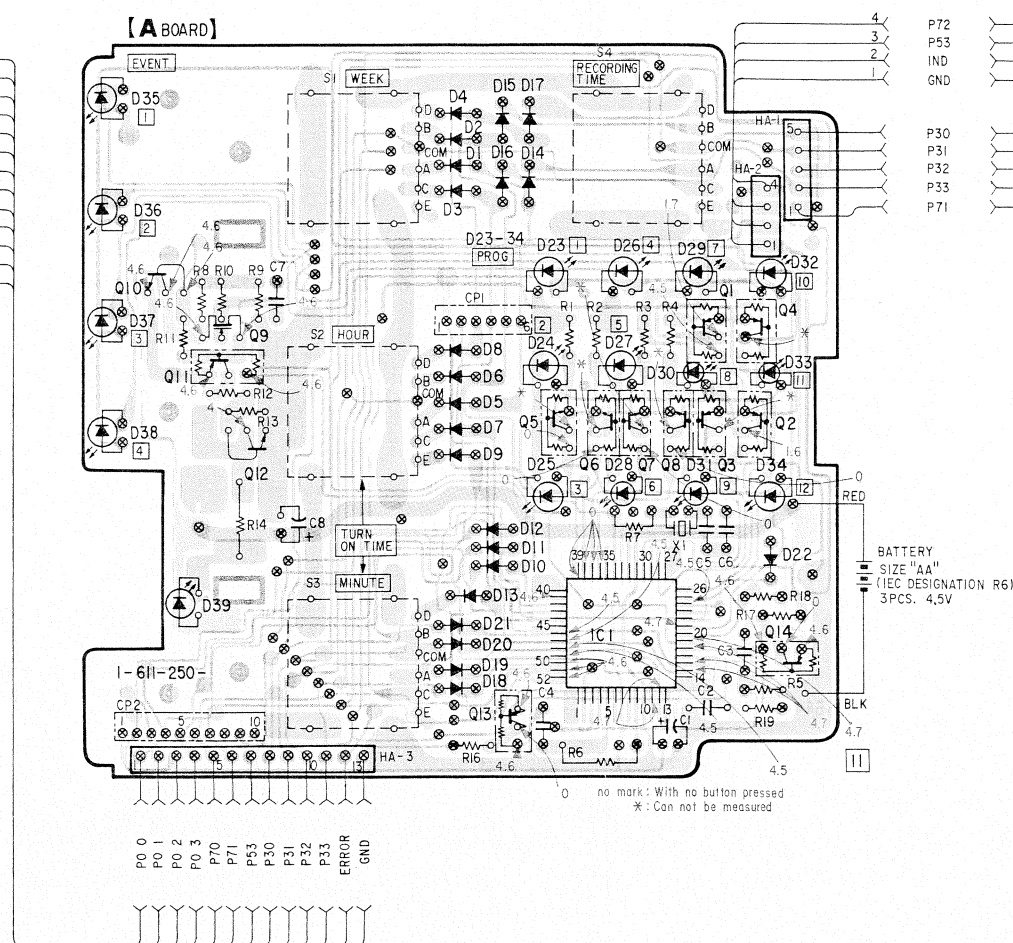
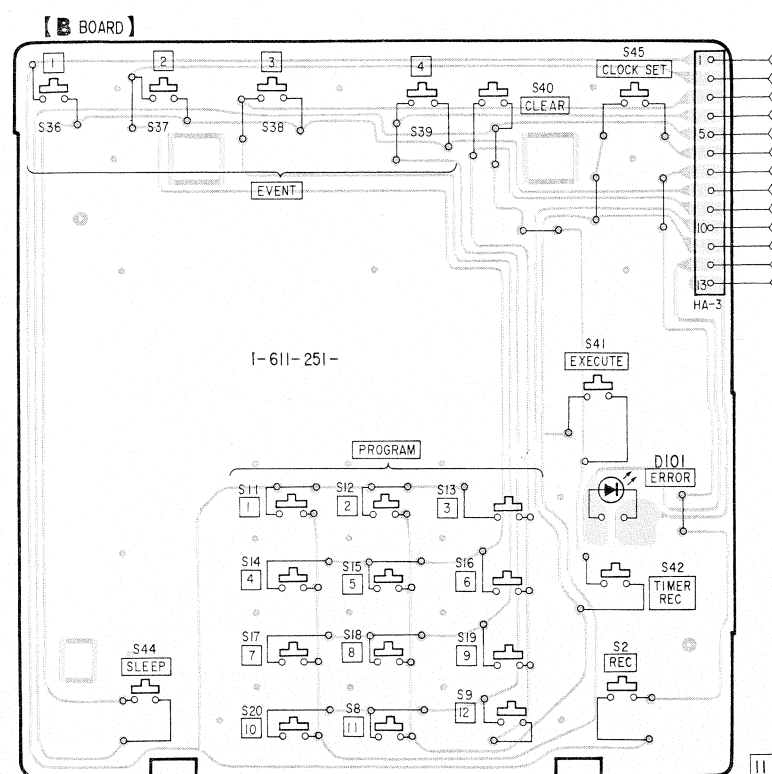
2 Press EJECT button and take out the cassette.

The memorized turn-on time and recording duration of each programme in the timer will be erased one by one after each recording. Please note that if you have set the timer to record everyday, the memory will not be erased until the tape reaches its end.

2. SCHEMATIC DIAGRAM



3. PRINTED WIRING BOARDS

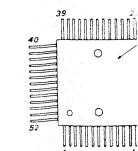
[illegible]

- Note:**
- All capacitors are in μF unless otherwise noted. p : μF 50WV or less are not indicated except for electrolytics.
 - All resistors are in ohms, 1/6W unless otherwise noted. k : 1000Ω , M : $1000k\Omega$
 - Reading are taken with a $10M\Omega$ digital multimeter.
 - $\oplus$: B+ bus.

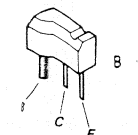
		Voltages in	
		1	2
IC1	(7)	GND	GN
	(10)	GND	GN
	(1)	4.0	4.
	(2)	4.7	4.
	(5)	4.7	4.
	(16)	4.7	4.
	(18)	0	C
	(19)	3.7	3.
	(2)	4.7	4.
	(24)	4.5	4.
	(3)	GND	GN
	(31)	GND	GN
	(36)	0	C
	(37)	0	C
	(38)	0	I.
	(39)	1.1	0
	(4)	4.6	4.
	(46)	3.9	3.
	(47)	4.1	4.
	(48)	4.0	4.
	(49)	4.1	4.
	(50)	4.6	4.
	(51)	4.6	4.
	(52)	4.6	4.
Q1	C	1.7	1.
Q2	C	1.6	1.
Q3	C	1.6	1.
Q4	C	1.6	1.
Q5	B	1.1	0
	C	2.5	3.
	E	GND	GN
Q6	B	0	
	C	3.0	
	E	GND	
Q7	B	0	
	C	3.0	
	E	GND	
Q8	B	0	
	C	3.0	
	E	GND	
Q9	D	4.	
	S	4.	
Q10	B	4.	
	E	4.	
Q11	B	4.	
	E	4.	
Q12	C	4.	
Q14	B	4.	
	C	4.	

4. SERVICE

μ PD7507C



D TA144EF



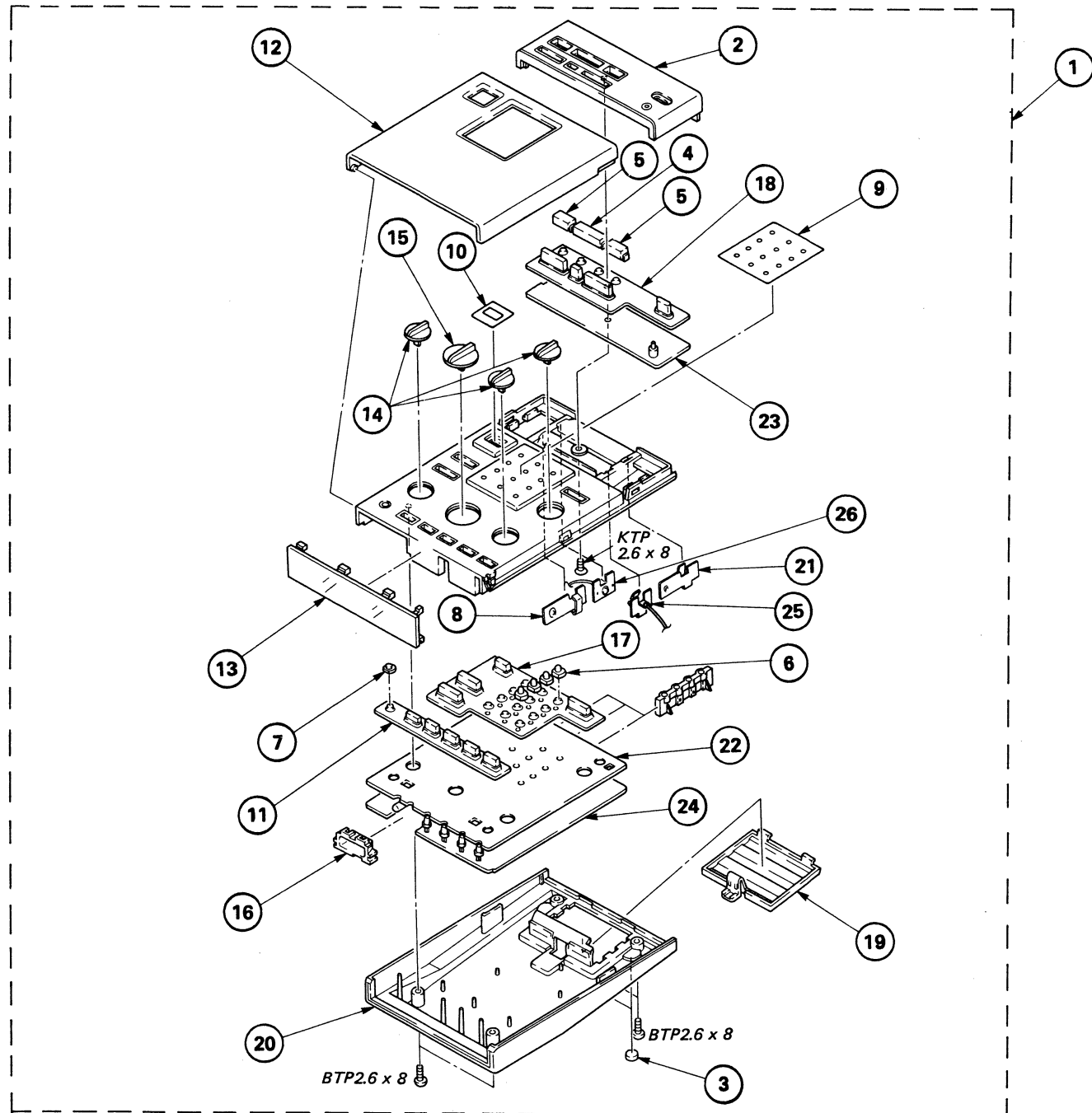
5. EXPLODED VIEW

NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

- Items marked "▲" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.



No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
1	A-6765-225-A	COMMANDER ASSY (A)		14	2-383-113-00	KNOB (A), ROTARY	
2	X-2383-102-0	CASE ASSY (A), REAR		15	2-383-114-00	KNOB (B), ROTARY	
3	2-270-305-00	FOOT, RUBBER		16	2-383-115-00	PLATE, REFLECTION	
4	2-290-632-00	PUSH BUTTON (L)		17	2-383-118-00	SHEET (B), RUBBER	
5	2-290-633-00	PUSH BUTTON (M)		18	2-383-119-00	SHEET (C), RUBBER	
6	2-383-101-00	BUTTON, CHANNEL		19	2-383-120-00	LID, BATTERY CASE	
7	2-383-102-00	BUTTON, TIMER		20	2-383-122-00	CASE, LOWER	
8	2-383-106-00	TERMINAL (D), BATTERY		21	4-350-925-00	TERMINAL (C), BATTERY	
9	2-383-107-00	PLATE, ORNAMENTAL, BUTTON		22	▲:1-611-251-00	B BOARD	
10	2-383-108-00	PLATE, ORNAMENTAL, REC BUTTON		23	▲:1-611-252-00	C BOARD	
11	2-383-110-00	SHEET (A), RUBBER		24	1-611-250-00	A BOARD	
12	2-383-111-00	LID, UPPER		25	2-290-601-00	TERMINAL (A), BATTERY	
13	2-383-112-00	PLATE, FROSTED		26	2-290-602-00	TERMINAL (B), BATTERY	

6. ELECTRICAL PARTS LIST

NOTE:

The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS
• MF : μ F, PF : μ F

RESISTORS
• All resistors are in ohms
• F : nonflammable

COILS
• MMH : mH, UH : μ H

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
	▲:1-611-251-00	B BOARD	*****	D13	8-719-911-19	DIODE 1SS119	
		DIODE		D14	8-719-911-19	DIODE 1SS119	
D101	8-719-930-31	DIODE GL-3PR1		D15	8-719-911-19	DIODE 1SS119	
		*****		D16	8-719-911-19	DIODE 1SS119	
	▲:1-611-252-00	C BOARD	*****	D17	8-719-911-19	DIODE 1SS119	
		CONNECTOR		D18	8-719-911-19	DIODE 1SS119	
CN201	▲:1-564-004-00	PIN, CONNECTOR 5P		D19	8-719-911-19	DIODE 1SS119	
CN202	▲:1-564-003-00	PIN, CONNECTOR 4P		D20	8-719-911-19	DIODE 1SS119	
		DIODE		D21	8-719-911-19	DIODE 1SS119	
D201	8-719-901-44	DIODE SLP144B		D22	8-719-911-19	DIODE 1SS119	
		*****		D23	8-719-930-31	DIODE GL3PR1	
	▲:1-611-250-00	A BOARD	*****	D24	8-719-930-31	DIODE GL3PR1	
	2-290-601-00	TERMINAL (A), BATTERY		D25	8-719-930-31	DIODE GL3PR1	
	2-290-602-00	TERMINAL (B), BATTERY		D26	8-719-930-31	DIODE GL3PR1	
	▲:2-383-124-00	HOLDER, LED		D27	8-719-930-31	DIODE GL3PR1	
		CAPACITOR		D28	8-719-930-31	DIODE GL3PR1	
C1	1-123-647-00	ELECT 47MF 20% 6.3V		D29	8-719-930-31	DIODE GL3PR1	
C2	1-161-013-00	CERAMIC 0.01MF 10% 25V		D30	8-719-930-31	DIODE GL3PR1	
C3	1-161-974-00	CERAMIC 0.1MF 0 16V		D31	8-719-930-31	DIODE GL3PR1	
C4	1-102-964-00	CERAMIC 36PF 5% 50V		D32	8-719-930-31	DIODE GL3PR1	
C5	1-102-951-00	CERAMIC 15PF 5% 50V		D33	8-719-930-31	DIODE GL3PR1	
C6	1-102-962-00	CERAMIC 30PF 5% 50V		D34	8-719-930-31	DIODE GL3PR1	
C7	1-161-013-00	CERAMIC 0.01MF 10% 25V		D35	8-719-930-31	DIODE GL3PR1	
C8	1-123-661-00	ELECT 100MF 20% 6.3V		D36	8-719-930-31	DIODE GL3PR1	
		COMPOSITION CIRCUIT BLOCK		D37	8-719-930-31	DIODE GL3PR1	
CP1	1-232-240-00	COMPOSITION CIRCUIT BLOCK		D38	8-719-930-31	DIODE GL3PR1	
CP2	1-232-385-00	COMPOSITION CIRCUIT BLOCK		D39	8-719-912-39	DIODE SLR932A	
		DIODE				IC	
D1	8-719-911-19	DIODE 1SS119		IC1	8-759-102-08	IC UPD7507G-554	
D2	8-719-911-19	DIODE 1SS119				TRANSISTOR	
D3	8-719-911-19	DIODE 1SS119		Q1	8-729-900-30	TRANSISTOR DTA144EF	
D4	8-719-911-19	DIODE 1SS119		Q2	8-729-900-30	TRANSISTOR DTA144EF	
D5	8-719-911-19	DIODE 1SS119		Q3	8-729-900-30	TRANSISTOR DTA144EF	
D6	8-719-911-19	DIODE 1SS119		Q4	8-729-900-30	TRANSISTOR DTA144EF	
D7	8-719-911-19	DIODE 1SS119		Q5	8-729-900-33	TRANSISTOR DTC144EF	
D8	8-719-911-19	DIODE 1SS119		Q6	8-729-900-33	TRANSISTOR DTC144EF	
D9	8-719-911-19	DIODE 1SS119		Q7	8-729-900-33	TRANSISTOR DTC144EF	
D10	8-719-911-19	DIODE 1SS119		Q8	8-729-900-33	TRANSISTOR DTC144EF	
D11	8-719-911-19	DIODE 1SS119		Q9	8-769-200-30	TRANSISTOR 2SK107-3	
D12	8-719-911-19	DIODE 1SS119		Q10	=>8-729-245-83	TRANSISTOR 2SC2458	
				Q11	8-729-900-30	TRANSISTOR DTA144EF	
				Q12	=>8-729-177-32	TRANSISTOR 2SD773	
				Q13	8-729-900-30	TRANSISTOR DTA144EF	
				Q14	8-729-900-30	TRANSISTOR DTA144EF	
						RESISTOR	
				R1	1-247-807-00	CARBON 100 5% 1/6W	
				R2	1-247-807-00	CARBON 100 5% 1/6W	
				R3	1-247-807-00	CARBON 100 5% 1/6W	

6. ELECTRICAL PARTS LIST

NOTE:

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- =>: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.
- Items marked "A" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- CAPACITORS
 - MF : μ F, PF : μ F
- RESISTORS
 - All resistors are in ohms
 - F : nonflammable
- COILS
 - MMH : mH, UH : μ H

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
*****				D13	8-719-911-19	DIODE 1SS119	
*****				D14	8-719-911-19	DIODE 1SS119	
*****				D15	8-719-911-19	DIODE 1SS119	
*****				D16	8-719-911-19	DIODE 1SS119	
*****				D17	8-719-911-19	DIODE 1SS119	
*****				D18	8-719-911-19	DIODE 1SS119	
*****				D19	8-719-911-19	DIODE 1SS119	
*****				D20	8-719-911-19	DIODE 1SS119	
*****				D21	8-719-911-19	DIODE 1SS119	
*****				D22	8-719-911-19	DIODE 1SS119	
*****				D23	8-719-930-31	DIODE GL3PR1	
*****				D24	8-719-930-31	DIODE GL3PR1	
*****				D25	8-719-930-31	DIODE GL3PR1	
*****				D26	8-719-930-31	DIODE GL3PR1	
*****				D27	8-719-930-31	DIODE GL3PR1	
*****				D28	8-719-930-31	DIODE GL3PR1	
*****				D29	8-719-930-31	DIODE GL3PR1	
*****				D30	8-719-930-31	DIODE GL3PR1	
*****				D31	8-719-930-31	DIODE GL3PR1	
*****				D32	8-719-930-31	DIODE GL3PR1	
*****				D33	8-719-930-31	DIODE GL3PR1	
*****				D34	8-719-930-31	DIODE GL3PR1	
*****				D35	8-719-930-31	DIODE GL3PR1	
*****				D36	8-719-930-31	DIODE GL3PR1	
*****				D37	8-719-930-31	DIODE GL3PR1	
*****				D38	8-719-930-31	DIODE GL3PR1	
*****				D39	8-719-912-39	DIODE SLR932A	
*****				IC			
*****				IC1	8-759-102-08	IC UPD7507G-554	
*****				TRANSISTOR			
*****				Q1	8-729-900-30	TRANSISTOR DTA144EF	
*****				Q2	8-729-900-30	TRANSISTOR DTA144EF	
*****				Q3	8-729-900-30	TRANSISTOR DTA144EF	
*****				Q4	8-729-900-30	TRANSISTOR DTA144EF	
*****				Q5	8-729-900-33	TRANSISTOR DTC144EF	
*****				Q6	8-729-900-33	TRANSISTOR DTC144EF	
*****				Q7	8-729-900-33	TRANSISTOR DTC144EF	
*****				Q8	8-729-900-33	TRANSISTOR DTC144EF	
*****				Q9	8-769-200-30	TRANSISTOR 2SK107-3	
*****				Q10	=>8-729-245-83	TRANSISTOR 2SC2458	
*****				Q11	8-729-900-30	TRANSISTOR DTA144EF	
*****				Q12	=>8-729-177-32	TRANSISTOR 2SD773	
*****				Q13	8-729-900-30	TRANSISTOR DTA144EF	
*****				Q14	8-729-900-30	TRANSISTOR DTA144EF	
*****				RESISTOR			
*****				R1	1-247-807-00	CARBON 100 5% 1/6W	
*****				R2	1-247-807-00	CARBON 100 5% 1/6W	
*****				R3	1-247-807-00	CARBON 100 5% 1/6W	

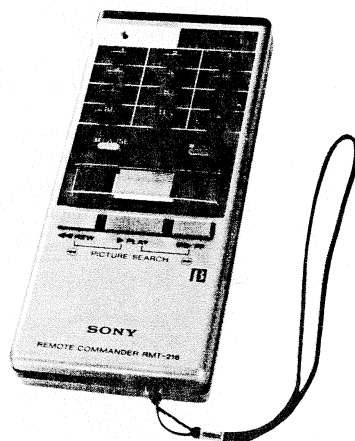
Ref.No.	Part No.	Description	Remark
R4	1-247-807-00	CARBON 100 5% 1/6W	
R5	1-247-903-00	CARBON 1M 5% 1/6W	
R6	1-214-782-00	METAL 160K 1% 1/4W	
R7	1-247-891-00	CARBON 330K 5% 1/6W	
R8	1-247-897-00	CARBON 560K 5% 1/6W	
R9	1-247-882-00	CARBON 130K 5% 1/6W	
R10	1-247-903-00	CARBON 1M 5% 1/6W	
R11	1-247-862-00	CARBON 20K 5% 1/6W	
R12	1-247-822-00	CARBON 430 5% 1/6W	
R13	1-247-855-00	CARBON 10K 5% 1/6W	
R14	1-246-403-00	CARBON 1.2 5% 1/4W	
R16	1-247-831-00	CARBON 1K 5% 1/6W	
R17	1-247-831-00	CARBON 1K 5% 1/6W	
R18	1-247-879-00	CARBON 100K 5% 1/6W	
R19	1-247-807-00	CARBON 100 5% 1/6W	
SWITCH			
S1	1-554-634-00	SWITCH, ROTARY	
S2	1-554-636-00	SWITCH, ROTARY	
S3	1-554-635-00	SWITCH, ROTARY	
S4	1-554-635-00	SWITCH, ROTARY	
CRYSTAL			
X1	1-567-153-00	VIBRATOR, CRYSTAL	

When indicating parts by reference number, please include the board name.

RMT-216

SERVICE MANUAL

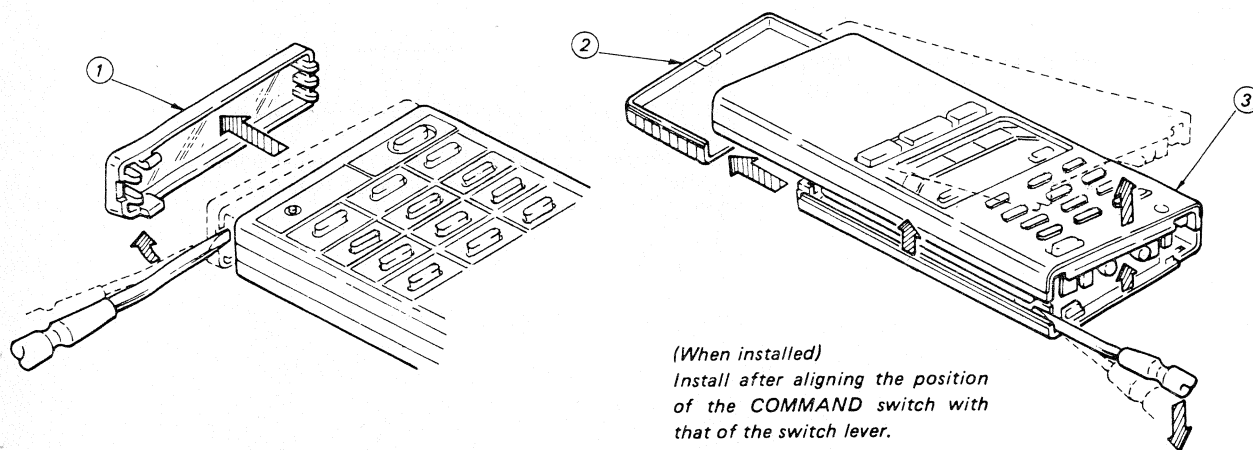
E Model



SPECIFICATIONS

Remote control system	Infrared control
Power requirements	3V dc, 2 IEC designation R6 batteries (size AA)
Dimensions	Approx. 65 × 20 × 153 mm (w/h/d) (2 ⁵ / ₈ × 1 ³ / ₁₆ × 6 ¹ / ₈ inches) incl. projecting parts and controls
Weight	Approx. 140 g (5 oz) incl. batteries

DISASSEMBLY



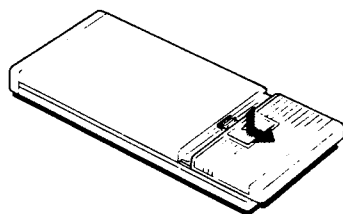
REMOTE CONTROL UNIT
SONY®

1. USAGE OF THE COMMANDER

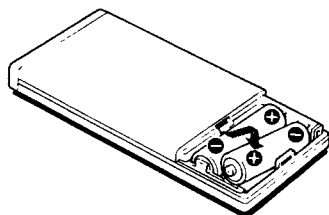
You can control almost all the functions of this video cassette recorder from your armchair using the supplied Remote Commander.

BATTERY INSERTION

1 Open the lid.



2 Insert two IEC designation R6 batteries (size AA) with correct polarity.



3 Close the lid firmly.

Notes on the Remote Commander

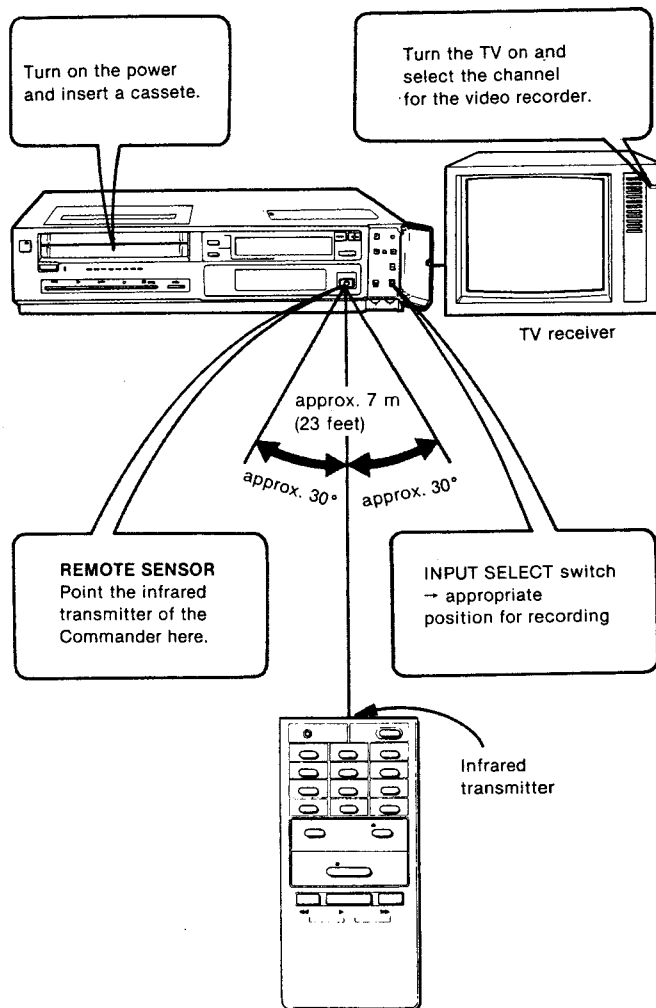
- Avoid dropping foreign objects into the cabinet, particularly when replacing batteries.
- Keep the Commander away from extremely hot or humid places.
- Avoid mechanical shock to the unit.
- This Commander may be used only with this video cassette recorder.

Battery life

In normal operation, batteries will last for about six months. If the range of the Remote Commander becomes noticeably short, replace the batteries with new ones. When the batteries are exhausted, the remote function indicator will not light when the buttons on the Commander are pressed.

If the Commander is not to be used for a long period of time, remove the batteries to avoid possible damage from battery leakage.

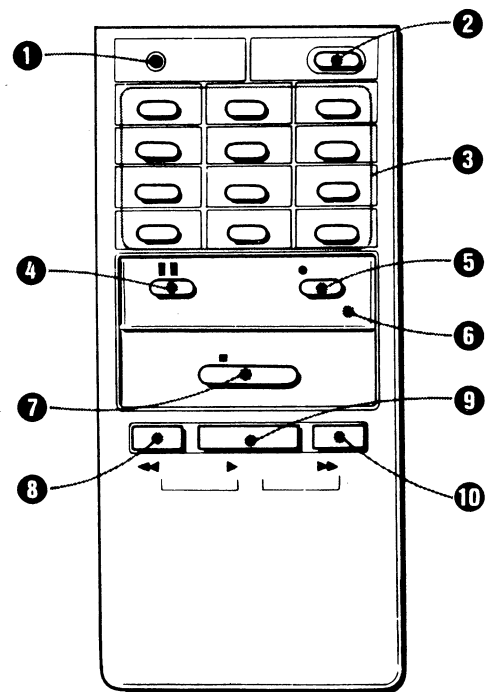
REMOTE OPERATION



Notes

- There should be no obstacles between the Commander and the REMOTE SENSOR of the recorder.
- The shorter the distance between the Commander and the recorder, the wider the angle within which the recorder can be controlled.

LOCATION AND FUNCTION OF CONTROLS



Remote function indicator
Lights up when any of the buttons on the Commander are pressed.

ON button
Press to turn the power on. To turn it off, press again.

Programme select buttons
Press to select a programme to be viewed or to be recorded.

II PAUSE button
Press to stop the tape momentarily. To resume the previous mode, press it again.

● REC button
Press to start recording.

Sliding cover
During playback, slide this cover over the record button to prevent accidental recording. During recording, slide this cover down to prevent accidental interruption of recording.

■ STOP button
Press to stop the tape.

REW button
Press to rewind the tape. Used also for reverse picture search operation during playback and for skip scan operation during rewinding.

9 ► PLAY button
Press to play the tape back.

10 ►► FF button
Press to advance the tape rapidly. Used also for forward picture search operation during playback and for skip scan operation during fast forward mode.

OPERATION

Recording

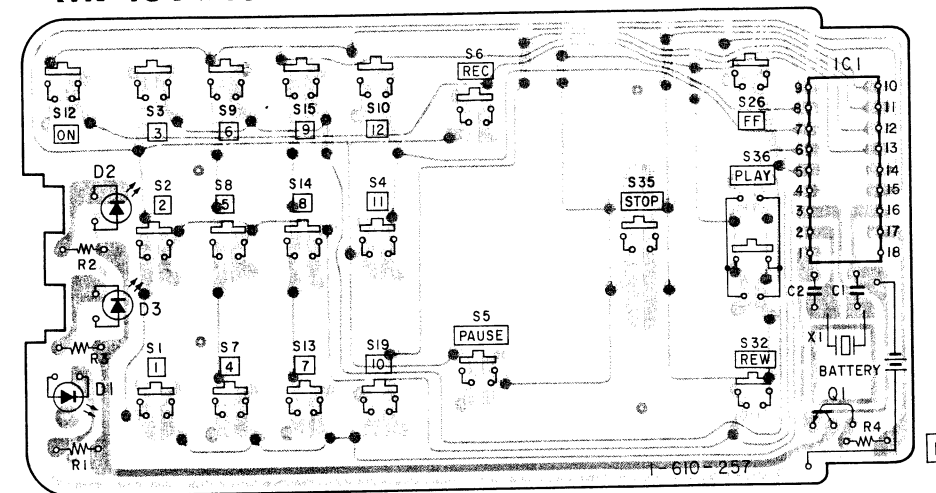
- 1 Select the channel to be recorded with the programme select button.
- 2 Press the ● REC button. The recording will begin.
To stop recording, press the ■ STOP button.

Playback

Press the ► PLAY button. Playback will begin.
To stop playback, press the ■ STOP button.

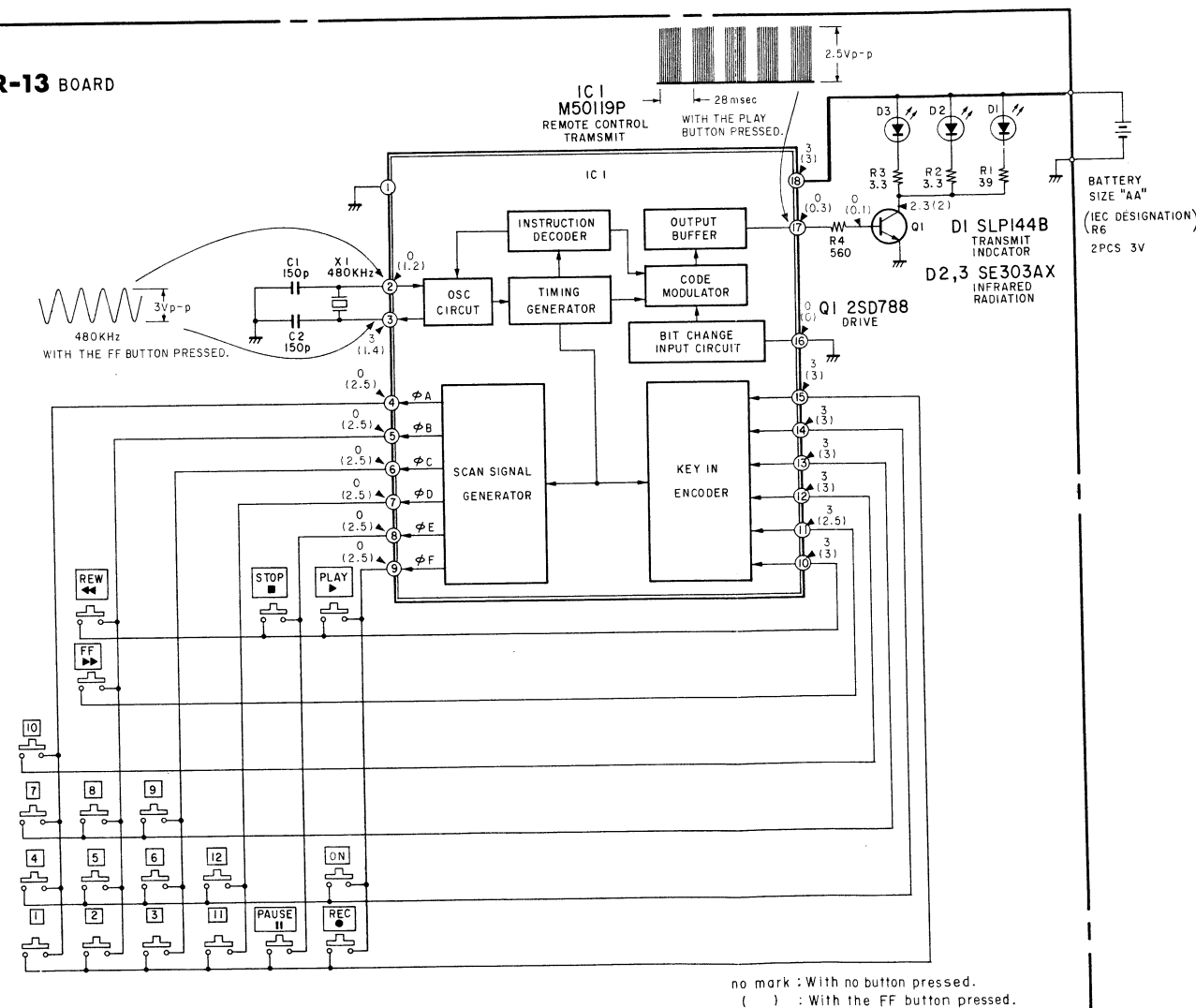
2. PRINTED WIRING BOARD

[IR-13 BOARD]



3. SCHEMATIC DIAGRAM

IR-13 BOARD



- All resistors are in ohms, 1/6W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted.
50V or less are not indicated except for electrolytic capacitors.
- — : B + bus.

The voltage value is measured using a digital tester (10M Ω).

When indicating parts by reference number, please include the board name.

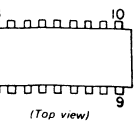
- — indicates a lead wire mounted on the component side.
- — indicates a lead wire mounted on the printed side.
- ■ Conductor side (inner)
- ■ Conductor side
- ■ B + pattern

M50119P

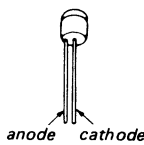
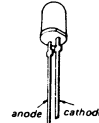
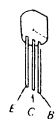
2SD788

SE303AX

SLP144B

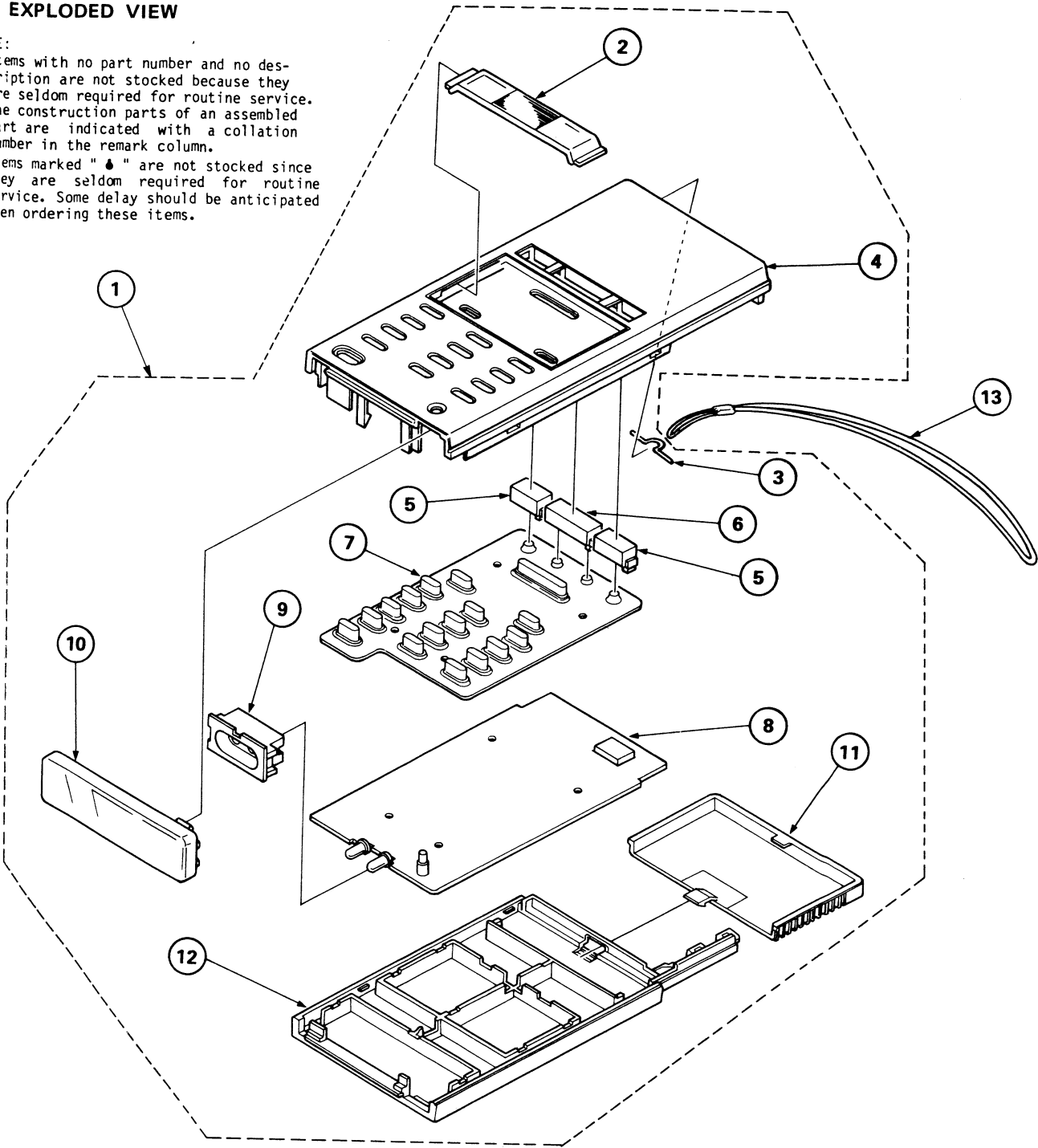


(Top view)



4. EXPLODED VIEW

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1	A-6765-199-A	COMMANDER ASSY RMT-216	2 - 12	8	▲:1-610-257-00	IR-13 BOARD	
2	2-290-603-00	CURSOR		9	2-298-402-00	MIRROR	
3	▲:2-290-630-00	STOPPER, HOLDER		10	2-290-608-00	PLATE, FROSTED	
4	X-2290-616-0	CASE ASSY UPPER		11	2-290-606-11	COVER, BATTERY	
5	2-290-633-00	PUSH BUTTON (M)		12	2-290-611-11	CASE, LOWER	
6	2-290-632-00	PUSH BUTTON (L)		13	4-352-958-00	STRAP, HAND	
7	2-374-636-00	RUBBER (L), CONTACT					

5. ELECTRICAL PARTS LIST

NOTE:

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

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- MF : μF , PF : $\mu\mu F$

- RESISTORS
- All resistors are in ohms
 - F : nonflammable

- COILS
- MMH : mH, UH : μH

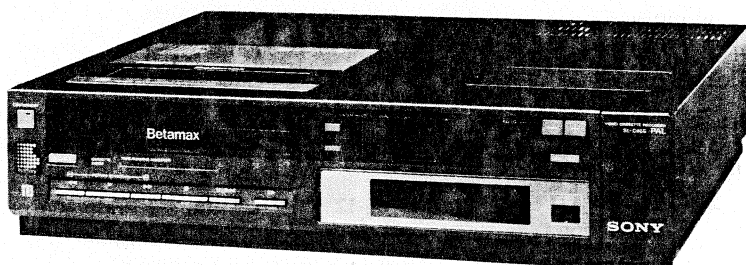
When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark
	A :1-610-257-00	IR-13 BOARD *****	
	2-290-601-00	TERMINAL (A), BATTERY	
	2-290-602-00	TERMINAL (B), BATTERY	
CAPACITOR			
C1	1-102-108-00	CERAMIC 150PF 10% 50V	
C2	1-102-108-00	CERAMIC 150PF 10% 50V	
DIODE			
D1 =>	8-719-193-03	DIODE SE303AX	
D2	8-719-193-03	DIODE SE303AX	
D3 =>	8-719-901-44	DIODE SLP144B	
IC			
IC1	8-759-600-07	IC M50119P	
TRANSISTOR			
Q1	8-729-378-84	TRANSISTOR 2SD788	
RESISTOR			
R1	1-247-797-00	CARBON 39 5% 1/6W	
R2	1-247-771-00	CARBON 3.3 5% 1/6W	
R3	1-247-771-00	CARBON 3.3 5% 1/6W	
R4	1-247-825-00	CARBON 560 5% 1/6W	
CRYSTAL			
X1	1-527-476-00	OSCILLATOR, CERAMIC	

SL-C80E

ADJUSTMENT MANUAL

AEP Model
E Model



711B CHASSIS

Beta



VIDEO CASSETTE RECORDER

SONY®

TABLE OF CONTENTS

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SECTION 1

PREPARATION FOR MECHANICAL SECTION CHECK, ADJUSTMENT, AND REPLACEMENT

1-1. CASE AND FRONT PANEL REMOVAL

- 1) Remove the four screws ①.
 - 2) Remove the upper case ② in the direction shown by the arrow ①A.
 - 3) Remove the nine screws ③.
 - 4) Remove the lower case ④.
 - 5) Remove the three screws ⑤.
 - 6) Remove the front panel ⑥ in the direction of the arrow ①B.
- (Refer to the Fig. A)

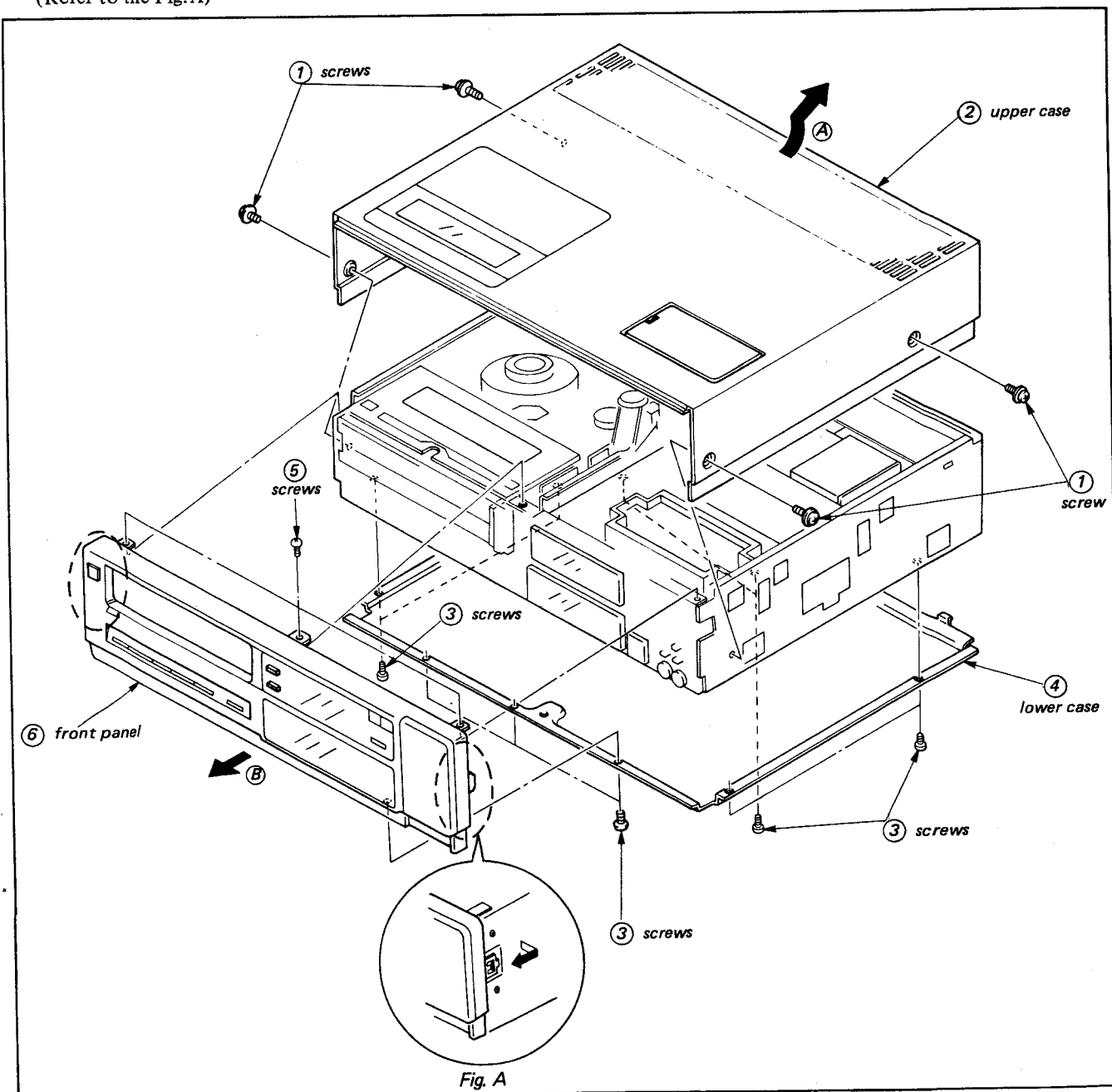


Fig. 1-1. Case and Front Panel Removal

1-2. PS-28 BOARD AND VOLTAGE SELECTOR SWITCH REMOVAL

- 1) Remove the two screws ①.
- 2) Remove the power cord bracket ②.
- 3) Remove the four screws ③.
- 4) Remove the power transformer ④.
- 5) Remove the PS-28 board.
- 6) Remove the two screws ⑤ . . . E model
- 7) Remove the voltage selector switch ⑥ . . E model

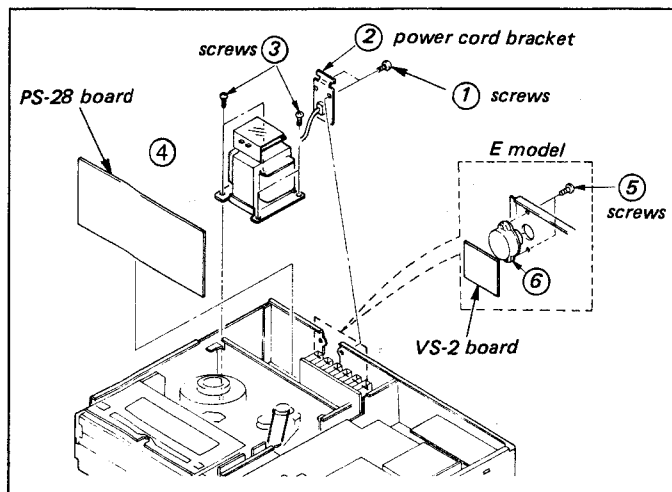


Fig. 1-2. PS-28 Board and Voltage Selector Switch Removal

1-4. TIMER BLOCK ASS'Y REMOVAL

- 1) Pull out the one connector ①.
- 2) Pull out the four connectors ②.
- 3) Pull out the two connectors ③.
- 4) Remove the one screw ④ and the FS-31 board.
- 5) Remove the five screws ⑤.
- 6) Remove the timer block ass'y ⑥.

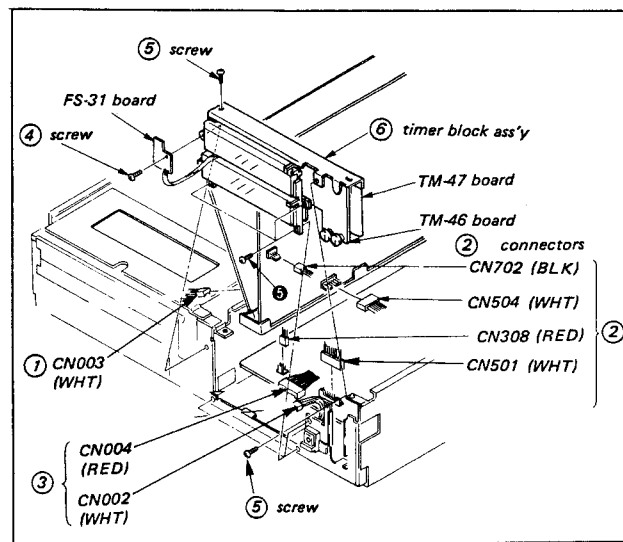


Fig. 1-4. Timer Block Ass'y Removal

1-3. TU-47 BOARD AND AS-8 BOARD REMOVAL

- 1) Remove the one screw ①.
- 2) Unlock the two hooks ② of holders in the direction of the arrow ④.
- 3) Open the TU-47 board in the direction of the arrow ⑤.
- 4) Unlock the two hooks ③ of holders in the direction of the arrow ④.
- 5) Open the AS-8 board in the direction of the arrow ⑥.

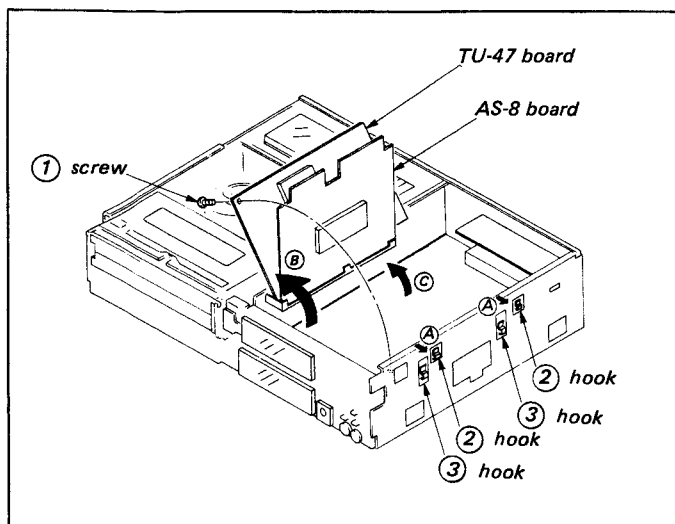


Fig. 1-3. TU-47 Board and AS-8 Board Removal

1-5. MECHANICAL CHASSIS BLOCK REMOVAL

1-5-1. RY-2 Board Removal

- 1) Stand the set with its power supply section down.
- 2) Remove the two screws ① , holding the RY-2 board.
- 3) Remove the RY-2 board in the direction shown by the arrow.
- 4) Pull out the one connector ② from the RY-2 board.

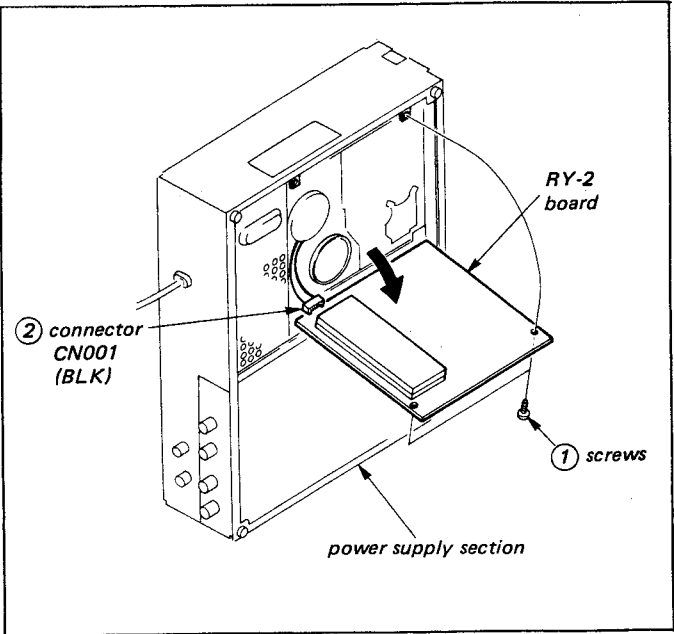


Fig. 1-5 RY-2 Board Removal

1-5-2. Mechanical Chassis Block Removal

- 1) Open the TU-47 board and AS-8 board in the direction of the arrow ④ .
- 2) Pull out the ten connectors ① from the SS-22 board.
- 3) Pull out the one connector CN506 (RED) ② from the AS-8 board.
- 4) Pull out the five connectors ③ from the AS-8 board.
- 5) Pull out the one connector CN001 (WHT) ④ from the CS-3 board.
- 6) Remove the four screws ⑤ .
- 7) Remove the mechanical chassis block ⑥ .

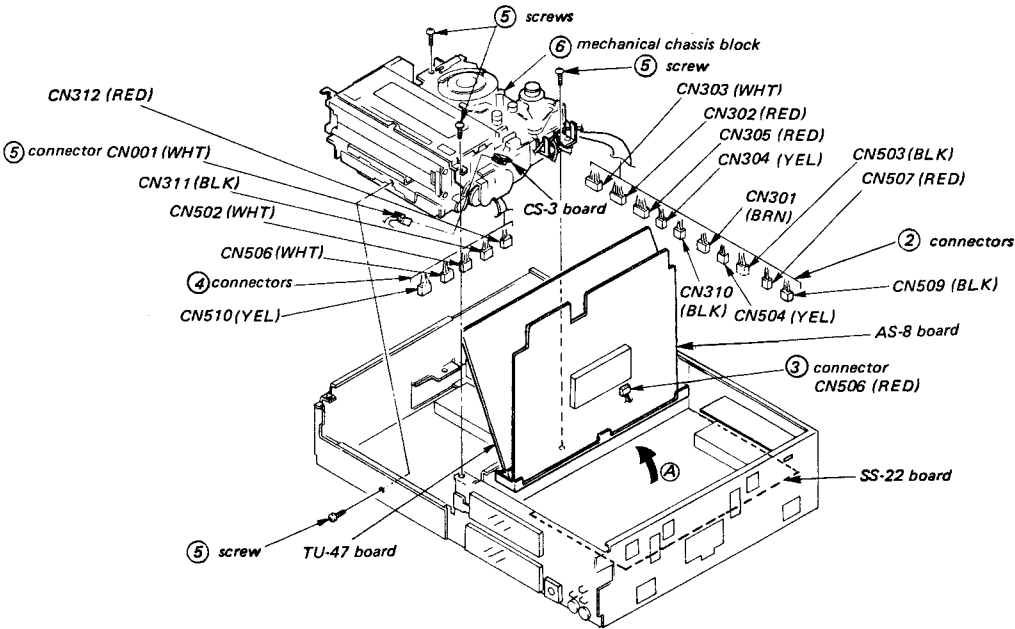


Fig. 1-6. Mechanical Chassis Block Removal

1-6. YC-26 BOARD REMOVAL

- 1) Stand the set with the power source side the bottom.
- 2) Remove the one screw ① and the knob, V synchronous ②.
- 3) Remove the panel, connector ③.
- 4) Remove the three screws ④, holding the YC-26 board.
- 5) Unlock the one hook ⑤ of holder in the direction of arrow A.
- 6) Swing open the YC-26 board in the direction shown by the arrow B and rest it on a cassette.

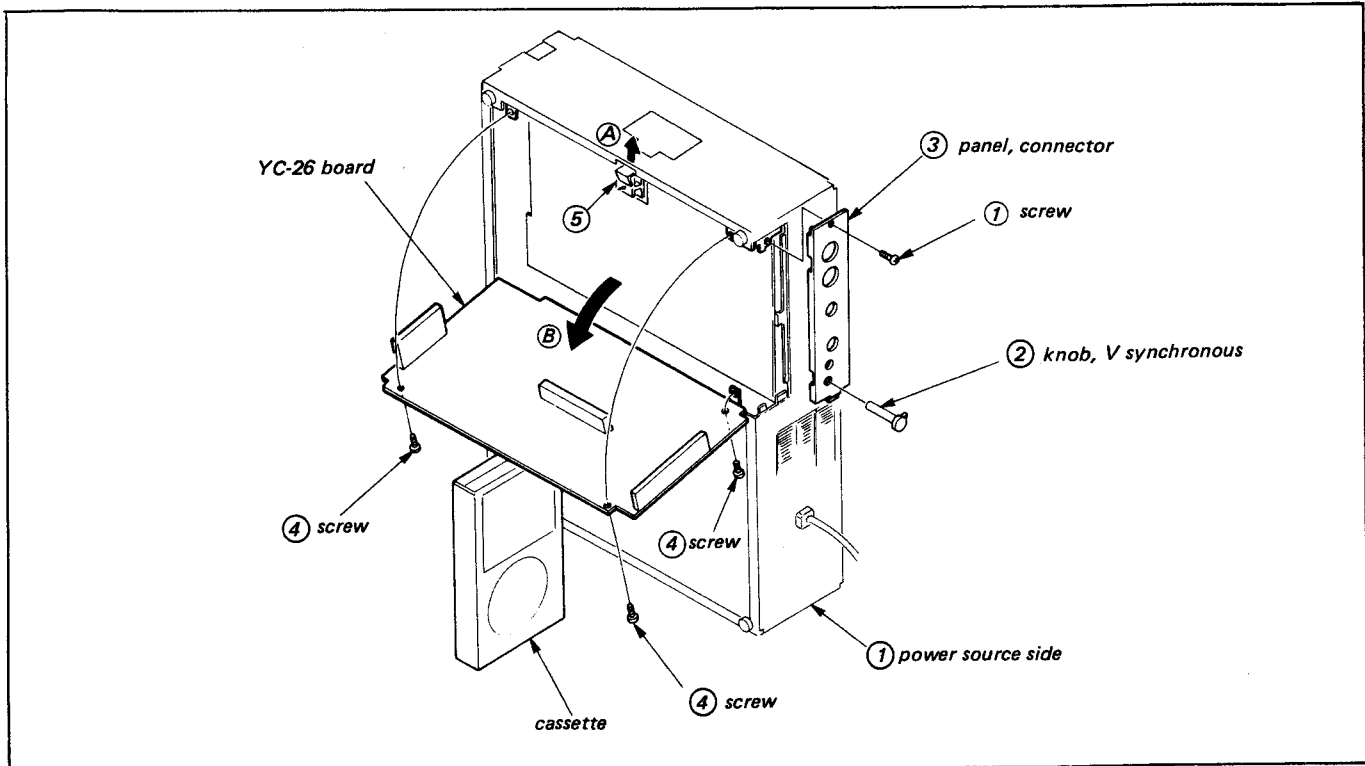


Fig. 1-7. YC-26 Board Removal

1-7. RY-2 BOARD REMOVAL

- 1) Stand the set with the right side panel on the bottom.
- 2) Remove the two screws ②, holding the RY-2 board.
- 3) Swing open the RY-2 board in the direction shown by the arrow A and rest it on a cassette.

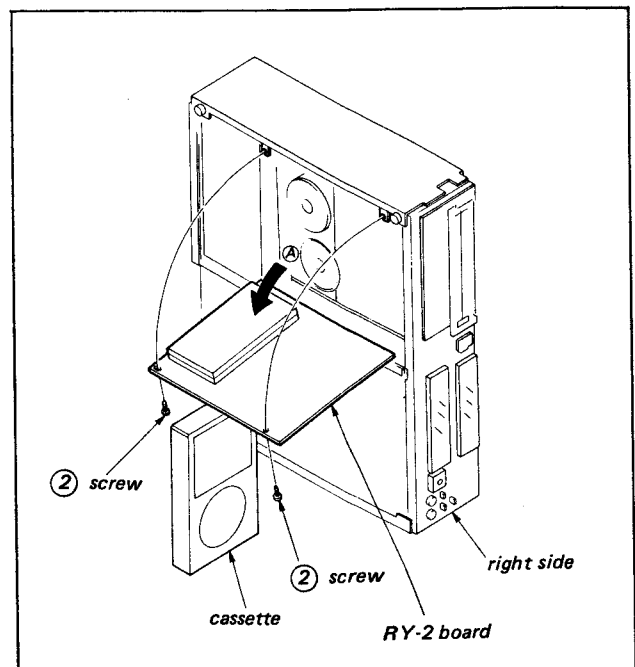


Fig. 1-8 RY-2 Board Removal

1-8 LOADING, THREADING, UNLOADING, AND UNTHREADING WHILE THE POWER IS OFF

1-8-1. Manual Loading and Unloading

- 1) Press stopper arm ① in the direction of the arrow ③ after releasing the prevention levers on the right and left sides inside the cassette compartment. Unlock the internal gear ②.
- 2) Rotate the internal gear ② in the direction of the arrow ④ until loading is completed.
- 3) Rotate the internal gear ② in the direction of the arrow ⑤ during unloading.

Note:

Rotate the worm gear ⑥ with a finger to load and unload when the loading belt ③ has become detached.

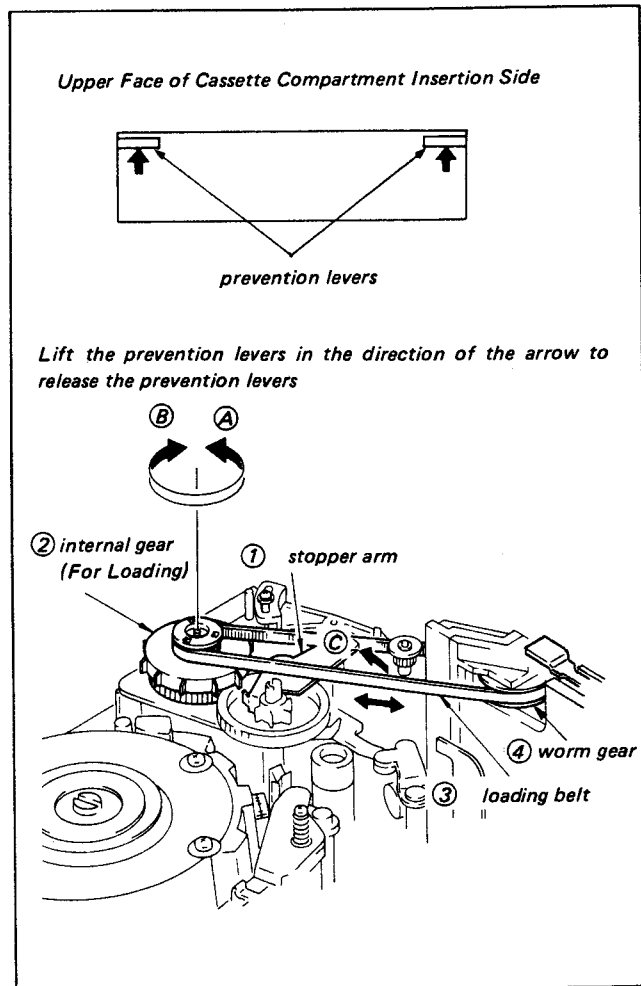


Fig. 1-8. Manual Loading and Unloading

1-8-2. Manual Threading and Unthreading

- 1) Rotate the loading gear in direction of the arrow ④ until threading is completed.
- 2) Rotate the loading gear in the direction of the arrow ⑤ for unthreading.

Caution:

Do not use a screwdriver, or other item, to rotate the loading gear. Push the side of the gear with a finger to rotate.

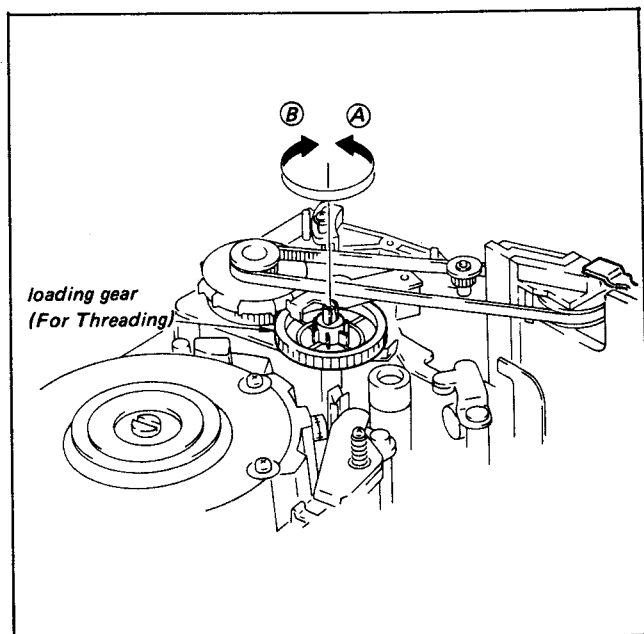
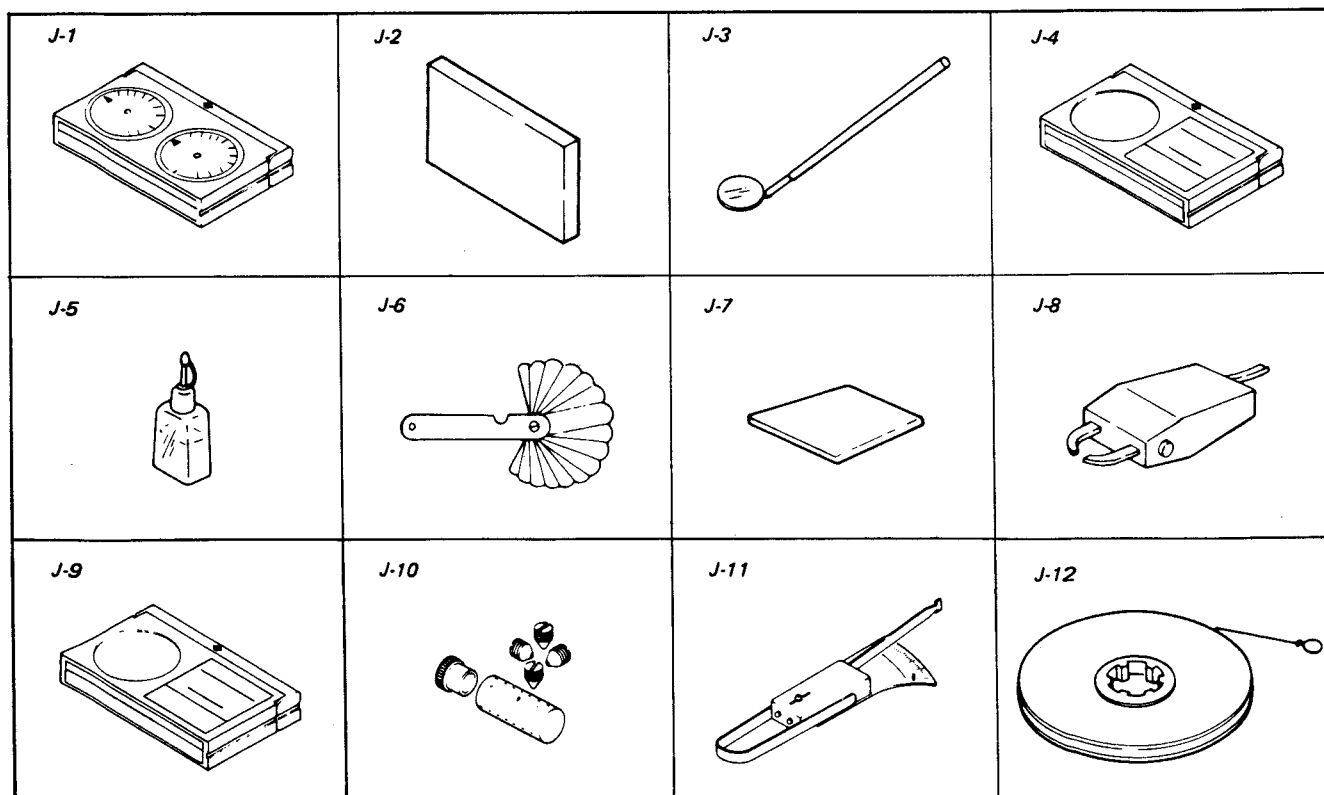


Fig. 1-9. Manual Threading and Unthreading

1-9. TOOLS AND FIXTURES REQUIRED

Ref. No.	Name	Part No.	Fixture No.
J-1	Forward-Back Tension Measurement Tape	J-6080-003-C	SL-0003C
J-2	Parallel Plate	J-6086-750-A	SL-0657
J-3	Small Adj. Mirror Spare Mirror	J-6080-029-A J-6080-030-1	SL-5052
J-4	Alignment Tape	8-969-995-52	KR5-2H
J-5	Cleaning Fluid	Y-2031-001-0	
J-6	Thickness Gauge	9-911-053-00	
J-7	Cleaning chamois	2-034-697-00	
J-8	Head Demagnetizer		
J-9	Lapping Tape	8-888-004-00	
J-10	Dihedral Adj. Screw	J-6080-013-1	SL-0013
J-11	Sector type gauge 50 g Max	7-732-050-20	
J-12	Reel Table Tension Fixture	J-6080-011-A	SL-0011

ITEMS J-5, J-6, J-7, J-8 can be obtained locally



SECTION 2

PERIODIC CHECK AND MAINTENANCE

The following maintenance and periodic checks are recommended to ensure optimum machine function and performance and to prolong machine and tape life.

2-1. MAINTENANCE AFTER REPAIR

Carry out maintenance work for the following items after repairing the machine regardless of the period of use.

2-1-1. Rotary Head Disc Assembly

- 1) Place a piece of chamois (tool Ref. No. J7) soaked in cleaning fluid (tool Ref. No. J5) lightly against the rotary drum assembly and clean the rotary head disc assembly by slowly rotating it by hand. (Important-Do not clean by rotating with the motor on.)
- 2) Do not clean the head tip by moving the chamois in a vertical direction. This may damage the head tip.

2-1-2. Cleaning of the Tape Transportation System

Clean the tape contact surfaces, such as the tape guide, drum assembly surfaces, capstan, and pinch roller using cleaning piece etc. soaked in cleaning fluid.

2-1-3. Cleaning of the Drive System

Clean the driving elements (reel base surfaces, etc.) using a cloth soaked in cleaning fluid.

2-2. PERIODIC CHECK ITEMS

Carry out maintenance checks for the following items depending on the duration of use.

Operating Hours (H)		500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	Remarks
Maintenance & Check												
Tape Transportation System	Cleaning of tape transportation system	○	○	○	○	○	○	○	○	○	○	This cleaning must be done whenever a repair is made.
	Cleaning and degaussing of ACE ass'y	○	○	○	○	○	○	○	○	○	○	
	Cleaning & degaussing of video disk ass'y	○	○	○	○	○	○	○	○	○	○	The life of the head varies, depending on operational conditions and method.
Driving System	Loading belt	○	○	○	○	○	○	○	★	○	○	• This cleaning must be done whenever a repair is made. • Replacement must be done depending on operating hours on the table, or every two years.
	Cleaning of iron core and opening of solenoid	—	—	—	○	—	—	—	○	—	—	Wipe iron core and opening of solenoid with dry cloth.
Performance Confirmation	Abnormal sound	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Adjust or replace the section which causes abnormal sound.
	Measurement of FWD back tension	—	☆	—	☆	—	☆	—	☆	—	☆	Confirmation must be made according to section Specified value: 30 ± 5 g·cm (When measured with torque cassette tape)
	Confirmation of brake system	—	☆	—	☆	—	☆	—	☆	—	☆	Confirmation must be made according to section
	Confirmation of record & playback functions	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Perform the confirmation whenever repair is made.

○ Cleaning ★ Replacement ☆ Confirmation

Note: When overhauling, refer to the above for part replacement.

SECTION 3

CHECK, ADJUSTMENT, AND REPLACEMENT PROCEDURES

3-1. REPLACEMENT OF ROTARY HEAD DISC ASSEMBLY

3-1-1. Removal of Rotary Head Disc Assembly

- 1) Unscrew the two screws ① holding the damper assembly and remove it.
- 2) Remove the hexagonal socket bolt ② with an Allen wrench and dismount the upper drum assembly.

Note:

Remove the upper drum while rotating it, without moving the adjust plate ④. Be very careful not to move the adjust plate ④, or tape path will be affected.

- 3) Unsolder the rotary head disc circuit board. (four red and white lead wires)
- 4) Remove the two hexagonal socket bolts ③ and dismount the disc assembly.

Note:

Be very careful not to touch the head tip, or touch it against anything.

3-1-2. Replacement

- 1) Position the rotary head disc, paying attention to the direction of the red and white lead wires.
- 2) Tighten the hexagonal socket bolt ③ and solder the lead wire.

Note:

Solder securely, being careful not to break the lead wires.

- 3) Mount the upper drum without moving the adjust plates ④ as when dismounting it and tighten the hexagonal socket bolt ② while pressing two height adjust sections.

Caution:

Be careful not to touch the head tip when replacing the drum.

Note:

When replacing the rotary drum head, it may be difficult to remove it from the head disc. In this event, follow the procedure below. (Fig. 3-2)

- (1) Remove the hexagonal socket bolts ③ bolting the rotary head disc assembly.
- (2) When the rotary head disc assembly is fitted tightly and cannot be readily dismounted, alternately and slowly insert the two hexagonal socket bolts ③ unbolted in (1) above it removal holes at 90° to the mounting holes. The rotary head disc assembly can be lifted by the force of the two screws and dismounted easily.

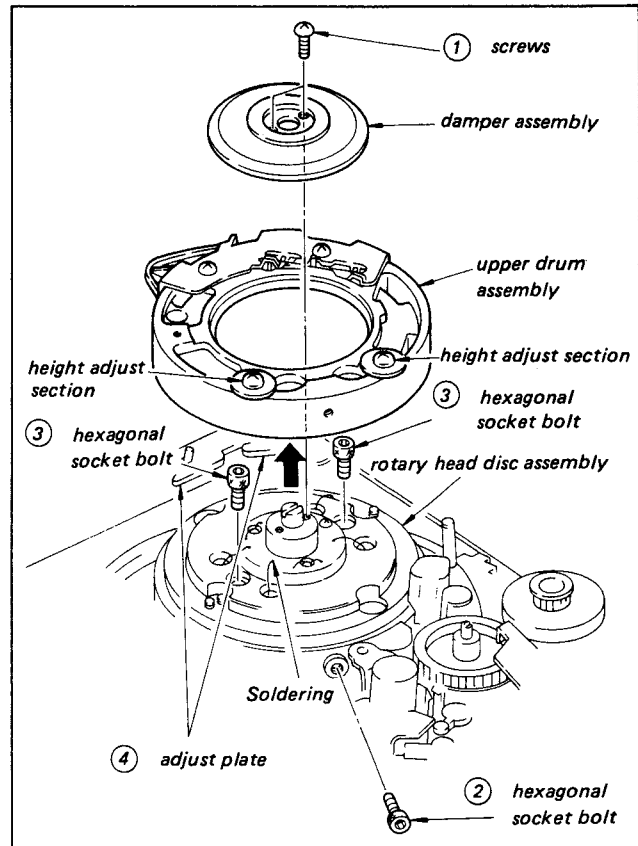


Fig. 3-1. Dismounting the Rotary Head Disc Assembly

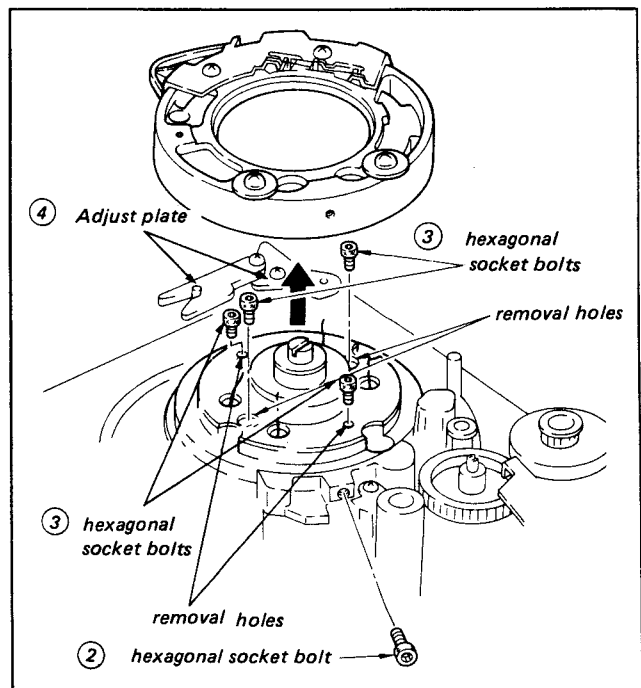


Fig. 3-2. Replacing Rotary Head Disc Assembly

3-2. VIDEO HEAD DIHEDRAL ADJUSTMENT

Generally this adjustment is not necessary except after video head disc replacement. (Video head discs for repair and replacement are precision adjusted using a microscope, and there is virtually never a need for readjustment.)

When determining the appropriate video head angle, play back an alignment tape. Make sure the tracking control knob is set at the center click position. When the check is made at a position other than the center click (tracking is off), the pictures will be played back as if the angle is wrong even if it is correct.

Be sure the ACE assembly position adjustment is completed (refer to "Tape Path Adjustment") before making this adjustment.

[Checking Method]

Play back the monoscope signal section of the alignment tape (KR5-2H) after setting the tracking control knob at the center click position. Verify that only one monoscope perpendicular line is played back immediately underneath the switching pulse, and not two lines.

If only one perpendicular line can be seen, the angle is correct, and no adjustment is needed.

If there are two, adjust as follows.

[Adjustment Procedure]

1. As shown in Fig. 3-3, screw in the two angle adjustment screws (Tool Ref. No.J-10) so that the lead wires from the video head are on the same level as the red adjusting screw hole and the top of the adjusting screw hole, and the top of the adjusting screw is on the same level as the top of the video head disc.

(If not screwed in sufficiently, the heads of the adjustment screws hit the upper drum, and the video head disc no longer rotates. Conversely, if they are screwed in too far, the head base moves, and the angle of the video head shifts considerably.)

Caution:

The white lead wire is a reference wire and should never be moved.

2. Screw in either one of the two adjustment screws until it feels tight. Additional tightening beyond this position moves the video head and so the angle can be adjusted.
3. Play back the monoscope signal section of the alignment tape (KR5-2H) and verify the angle. If the angle of the perpendicular line is larger than before adjustment, screw the adjustment screw counterclockwise to loosen and adjust the screw on the other side.
4. After adjusting, unscrew and check again.

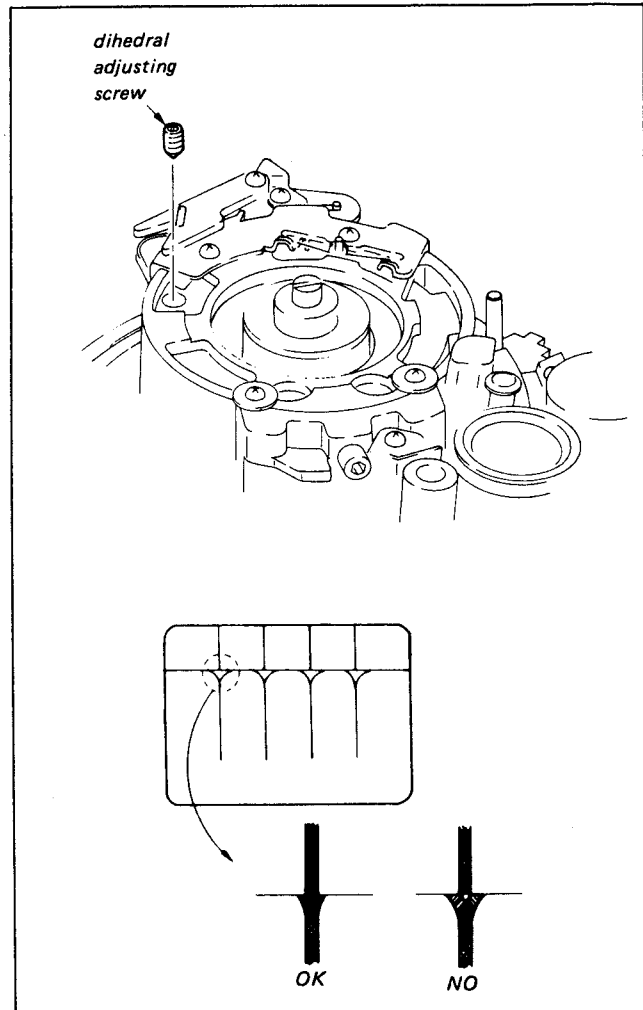


Fig. 3-3. Video Head Dihedral Adjustment (1)

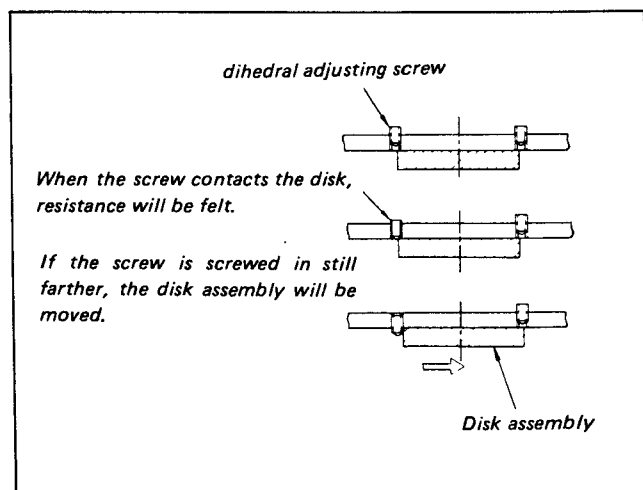


Fig. 3-4. Video Head Dihedral Adjustment (2)

3-3. REPLACEMENT AND ADJUSTMENT OF DRUM ASSEMBLY

3-3-1. Replacement

- 1) Measure and record the two gaps (A) between the upper drum tape holding section and the adjust plates (in Fig. 3-5). (Do not forget to do this, as the adjust plate mounting position affects the tape path.)
- 2) Unscrew the screws ① shown in Fig. 3-5 and remove the tape guide ground plate and adjust plates (2) and (3-1).
- 3) Remove the connector and three drum mounting screws from the bottom of the chassis and remove the drum assembly body.
- 4) Re-assemble the parts in reverse order.
- 5) Adjust according to "Tape Path Adjustment" after replacing the drum.

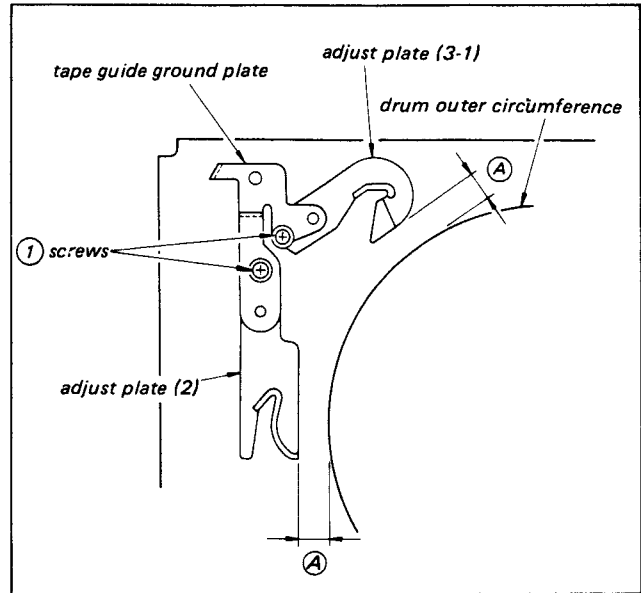


Fig. 3-5. Replacing Drum

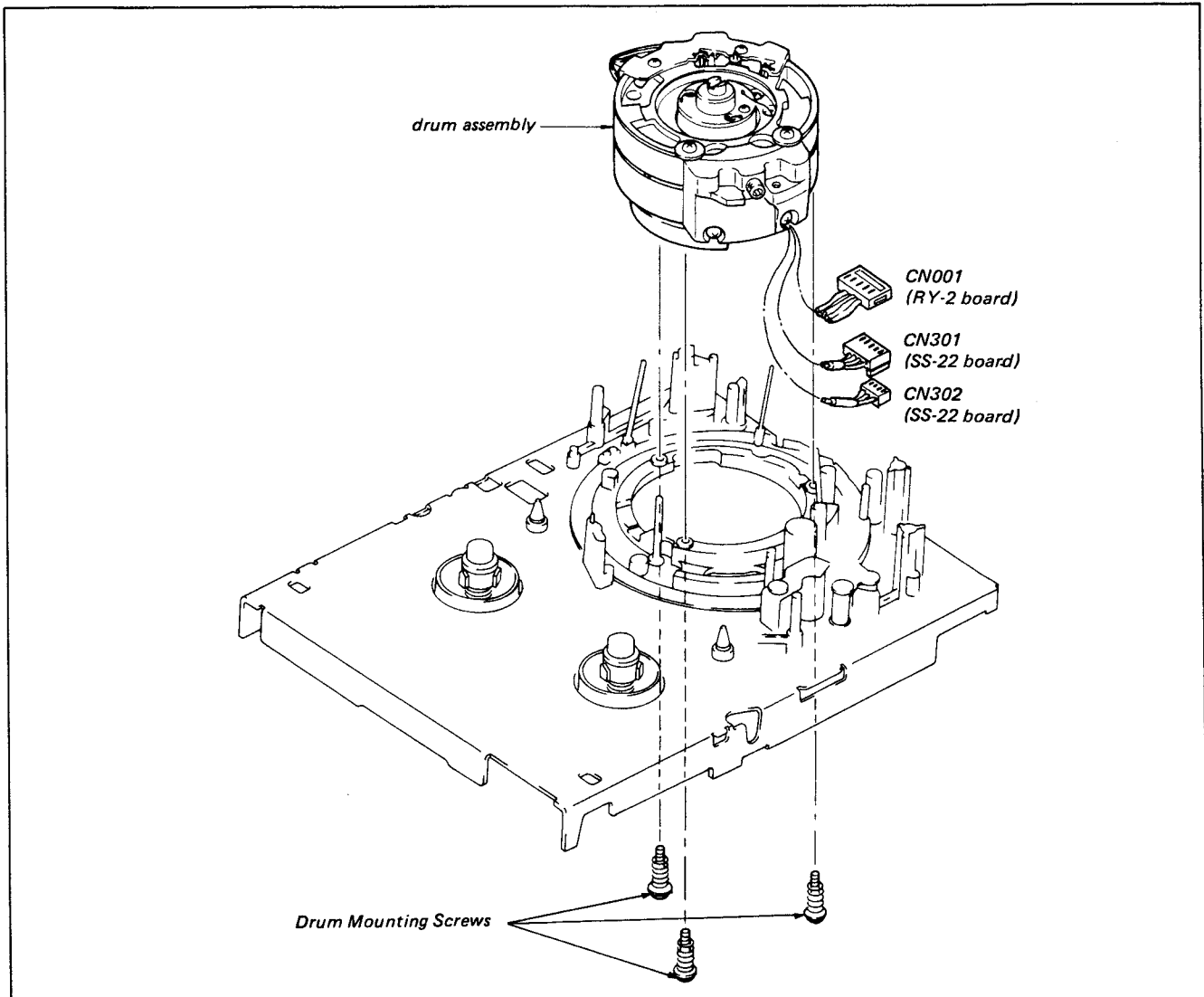


Fig. 3-6. Dismounting Drum Assembly

3-3-2. Motor Clearance Adjustment when Replacing Drum Assembly

When replacing the drum assembly, adjust so that clearance between the rotor and coil is 0.3 — 0.6 mm. (See Fig. 3-7)

[Procedure]

- 1) When re-assembling the drum, use the spacer which was removed and confirm that the 0.3 mm side of the clearance gauge included with the repair drum can be inserted, and that the 0.6 mm side cannot be inserted.
- 2) If this specification is not satisfied, dispose of the old spacer and use the spacers (0.3 mm × 4) included with the new repair drum as needed.

* Clearance Confirmation

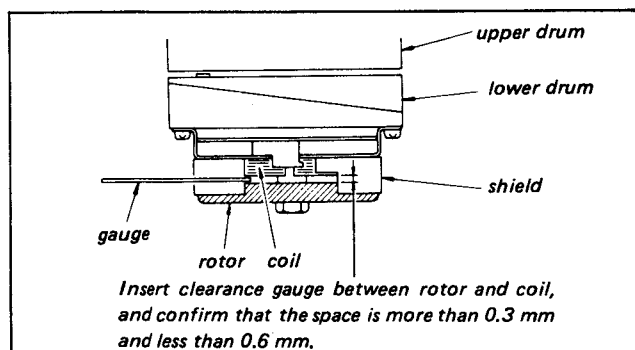


Fig. 3-7. Adjusting Motor Clearance When Replacing Drum Assembly

[Removal of Stator, Rotor]

- 1) Remove nut ① and washer ②.
- 2) Remove rotor ③ from stator ④.
- 3) Unscrew the two screws ⑤ and remove stator from drum body.

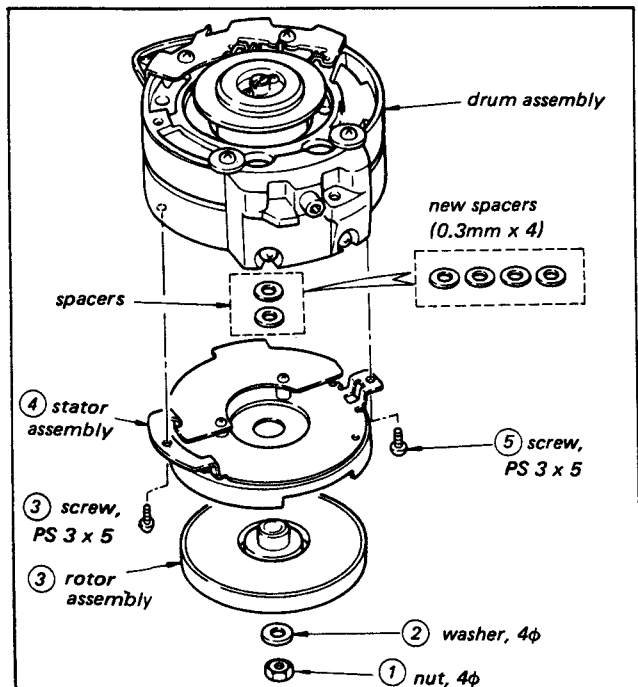


Fig. 3-8. Dismounting Stator and Rotor When Replacing Drum Assembly

3-4. REPLACEMENT AND ADJUSTMENT OF CAPSTAN MOTOR

3-4-1. Removal of the Capstan Motor (Fig. 3-9)

Unscrew screws ①, ②, ③ and remove the capstan motor from the mechanism chassis.

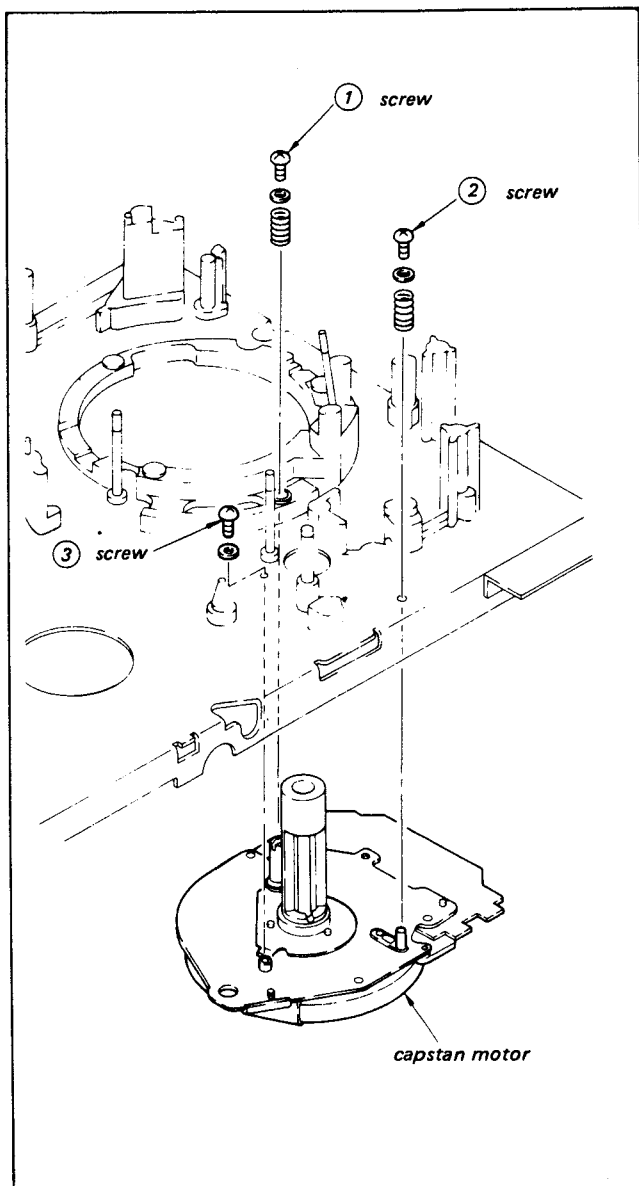


Fig. 3-9. Dismounting Capstan Motor

3-4-2. Perpendicular Adjustment of Capstan Spindle

Be sure to adjust as follows after the capstan motor has been replaced or removed:

- 1) Place parallel plate (Tool Ref. No. J-2) on No. 10 guide sleeve of the pinch press arm assembly perpendicularly, as shown in Fig. 3-10.
- 2) Loosen screw ①.
- 3) Rotate adjusting screw ② and align the capstan spindle perpendicularly.
- 4) Tighten screw ① and fix the capstan motor.
- 5) Adjust according to "Tape Path Adjustment".

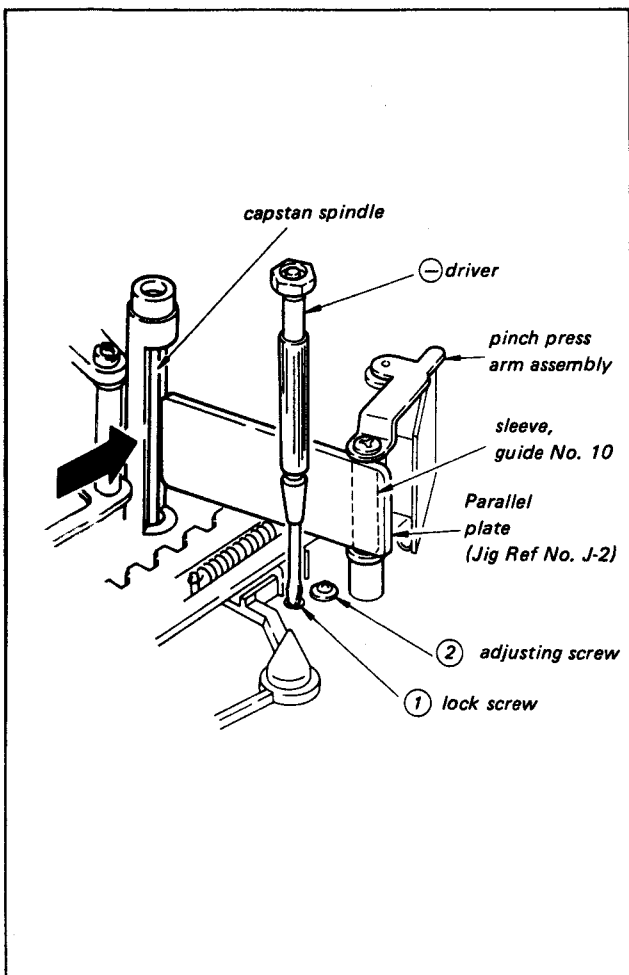


Fig. 3-10. Perpendicular Adjustment of Capstan Motor Spindle

3-5. REMOVAL OF S COIL SENSOR ASSEMBLY (Fig. 3-11)

- 1) Remove spring ① and disengage hook ② to pull out the S coil sensor assembly.
- 2) Disconnect the connector from CN604 of the SS-16 board.

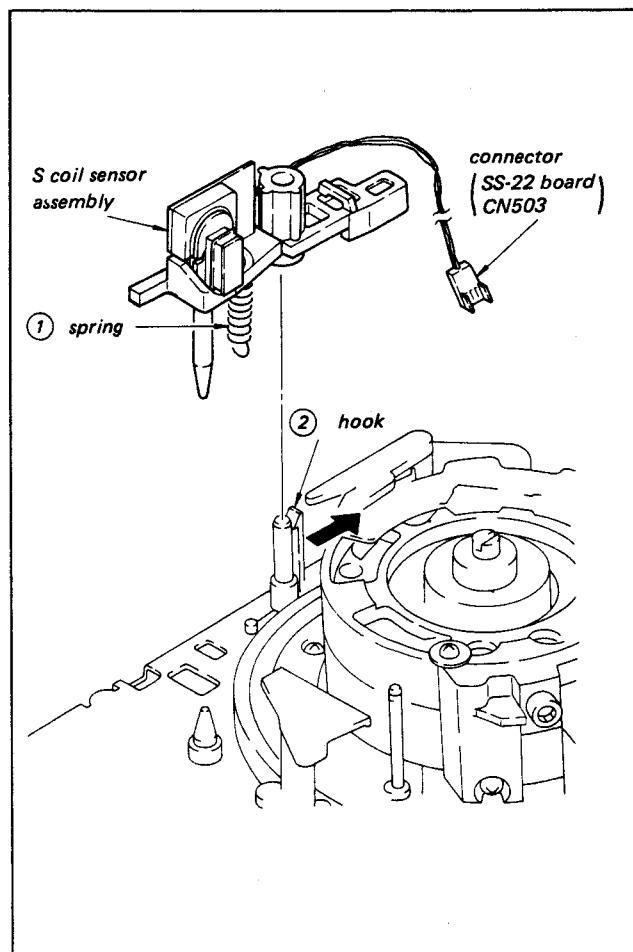


Fig. 3-11. Dismounting S Coil Sensor Assembly

3-6. REMOVAL FL CASSETTE COMPARTMENT ASSEMBLY

- 1) Remove the internal gear flange ① .
- 2) Loosen the loading belt ② and remove it from the threading motor.
- 3) Remove the four mounting screws ③ of the FL cassette compartment ④ .
- 4) Disconnect the exposed connector from the CS-3 board (CN001 ⑤) on the FL cassette compartment assembly, and remove the FL cassette compartment assembly in the direction shown by the arrow.

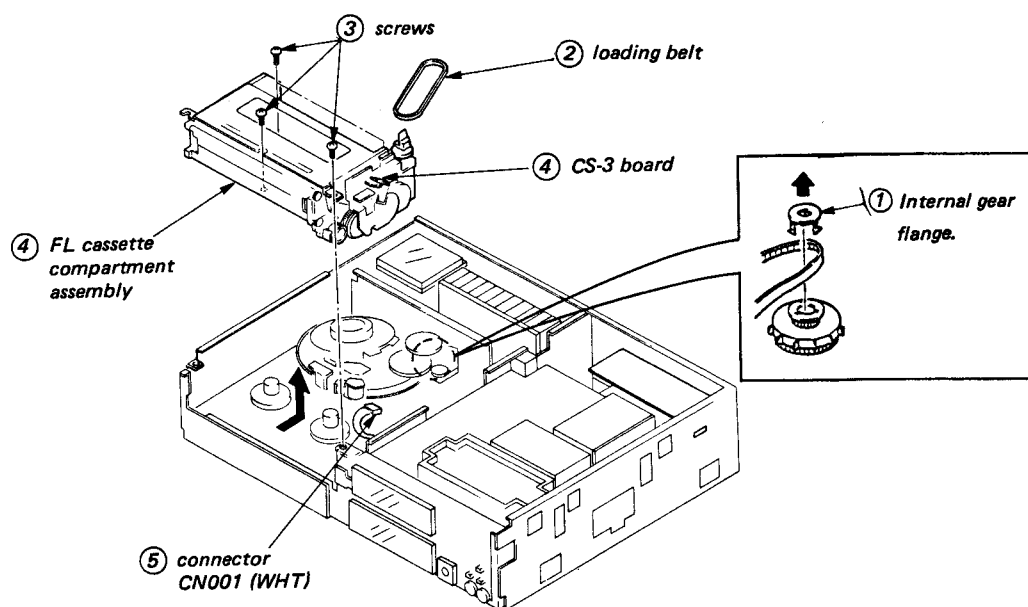


Fig. 3-12. Removal of FL Cassette Compartment Assembly

3-7. ADJUSTMENT OF FL CASSETTE COMPARTMENT ASSEMBLY

3-7-1. Mounting of FL Cassette Compartment Assembly (Fig. 3-13, 14)

- 1) Stretch the two hooks (2) of the FL cassette compartment on the mechanism chassis and place the cassette compartment in a predetermined position on the chassis.
- 2) Mount the FL cassette compartment assembly and loosely tighten the three screws (3).
- 3) Move the FL cassette compartment assembly longitudinally relative to the mechanism chassis, set in a predetermined position, then securely tighten the three mounting screws (3).
- 4) Suspend the loading belt (7) around the threading motor (4), tension pulley arm (5), and worm gear (6) and hold the loading belt (7) with the internal gear flange (8).
- 5) Push the car tension arm (5) in the direction of the arrow, to eliminate slack on the loading belt (7), then secure the arm (5) with the arm adjustment screw (1).
- 6) Insert the connector of the wire harness protruding from the body onto the connector CN001 (9) of the CS-3 board.

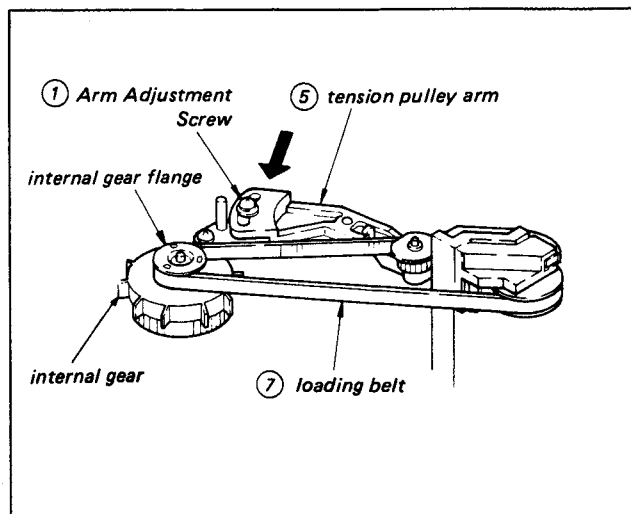


Fig. 3-14. Adjustment of Loading Belt

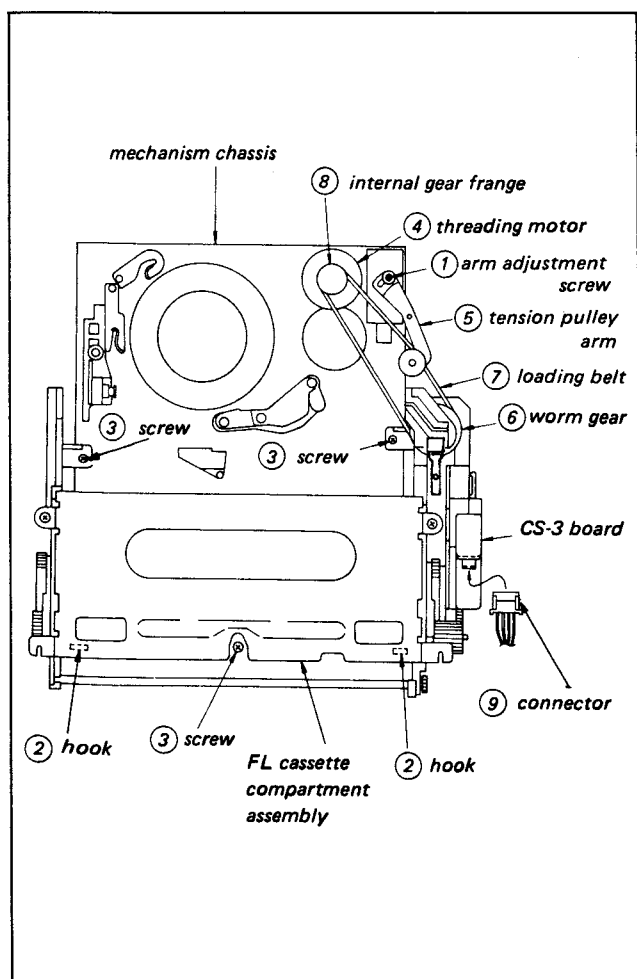


Fig. 3-13. Remounting FL Cassette Compartment

3-7-2. Adjustment of Cassette-ON Switch

Loosen the screw ② which is fixing the cassette-ON cam ①. Move the cassette-ON cam in the arrow direction so that the microswitch (cassette on) ⑤ is turned on when the gap between the left end of the driving roller ③ and the end/face/ of the worm gear holder ④ is 8 mm to 10 mm. Then fasten the screw ②.

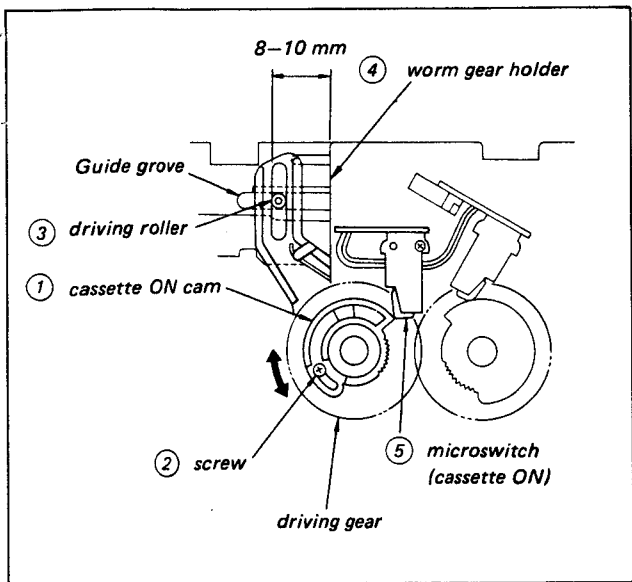


Fig. 3-15. Cassette-ON Switch Operation Check and Adjustment

3-7-3. Adjustment of Cassette-OFF Switch

Loosen the screw ② which is fixing the cassette-OFF cam ①. Move the cassette-OFF cam in the arrow direction so that the microswitch (cassette off) ⑤ is turned off when the gap between the left end of the driving roller ③ and the end face of the worm gear holder ④ is 16 mm to 18 mm. Then fasten the screw ②.

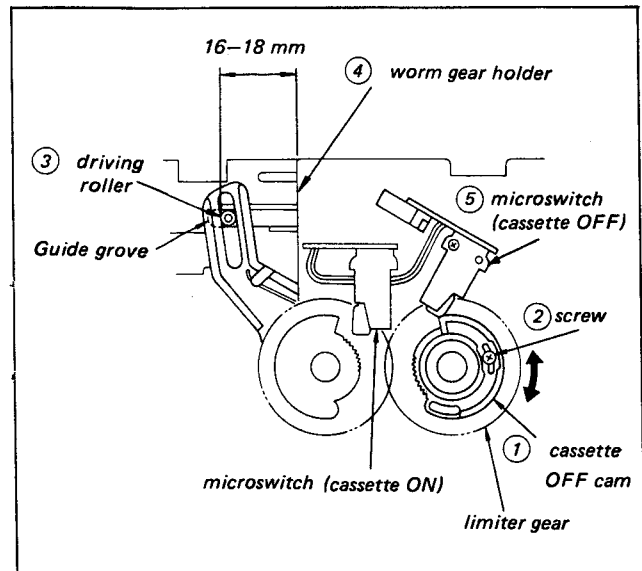


Fig. 3-16. Cassette-OFF Switch Operation Check and Adjustment

3-7-4. Check and Adjustment of Cassette Door Assembly

[Check Procedure]

Be certain that the upper door ② and lower door ③ become perpendicular when the switching door arm ① has fully returned in the direction of the arrow A.

[Adjustment Procedure]

Check that the switching door rack plate ④ is fully returned, fit in the directions of arrows B and C so that the upper door ② and lower door ③ become perpendicular when the tips of the switching door rack plate ④ and side plate, right ⑤ mismatch by about 1 mm, then match the teeth. Fit the outer door holder ⑥ into the side plate, right ⑤ and secure the upper door ② and lower door ③.

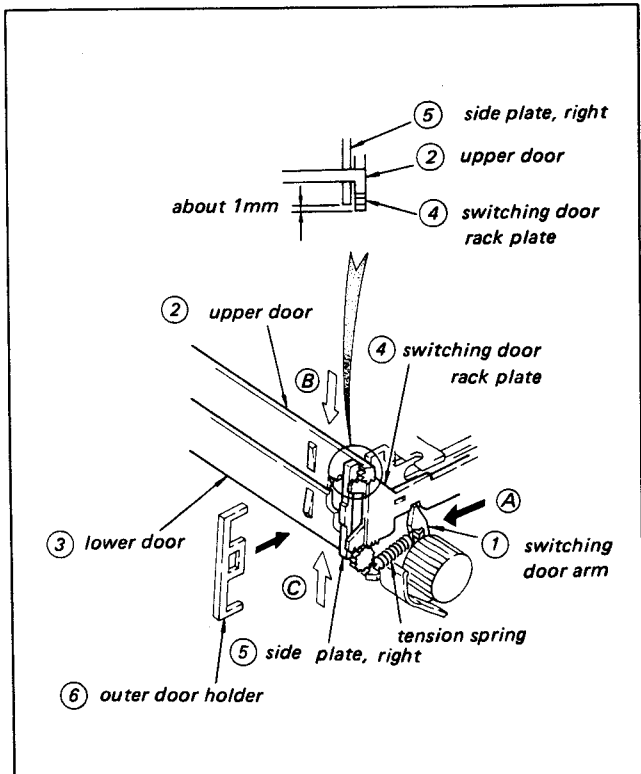


Fig. 3-17. Position Adjustment of Cassette Door Assembly

3-7-5. Position Matching of Right Worm Wheel of FL Cassette Compartment Assembly

In the FL cassette compartment assembly, the cassette holder feed rate is determined using a worm wheel system so that the cassette holder always moves parallel to the mechanism chassis. Therefore, cassette feeding cannot be performed properly unless the worm wheel gearing position is properly adjusted during subsequent assembly once gearing of this section has been moved from the normal position.

[Gear Positioning]

- 1) Prepare a rod about 1.5 mm thick and 200 mm long.
- 2) Pass the rod through the hole in the side plate, right and left (Perform on left and right sides.)
- 3) Insert the assembly comprising the driving arm, right ① and cassette-on cam ② on the positioning rod and assemble it on the right of the side plate, ③. Similarly assemble the driving arm, on the left of the side plate.
- 4) Insert the worm wheel ④ through the positioning rod as described in 3) above and assemble it on the right of the side plate ③.
- 5) Insert the assembly comprising the limiter gear ⑤ and cassette-off cam ⑥ on the positioning rod as in 3) and 4) above and assemble it on the right of the side plate ③.
- 6) After assembling, pull the rod out from the right side.

Note:

If a rod is not available, the holes can be lined up by eye.

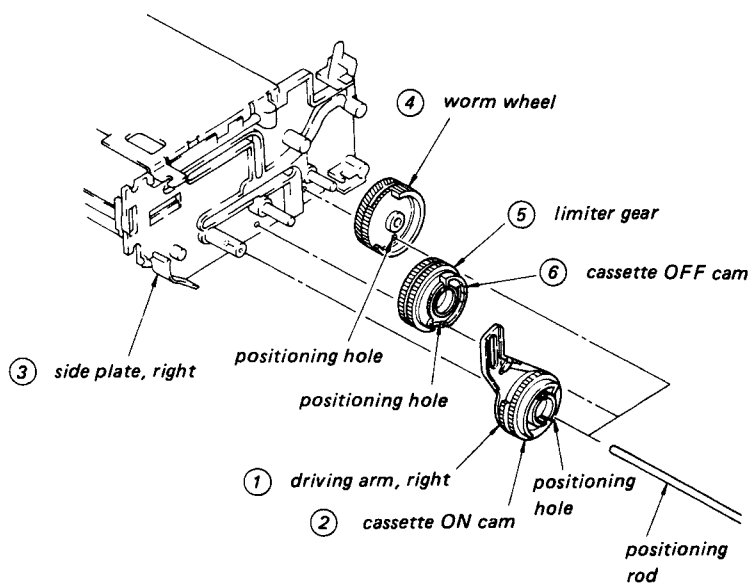


Fig. 3-18. Positioning of FL Cassette Compartment Worm Wheel

3-8. REMOVAL OF REEL BLOCK

- 1) Remove the four screws.
- 2) Remove the reel block.

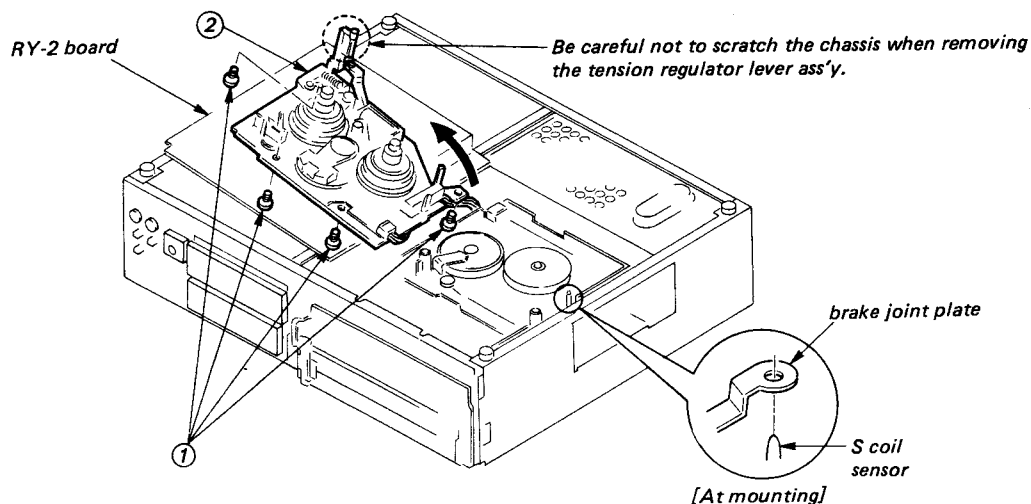


Fig. 3-19. Dismounting Reel Block

3-9. UNTHREADING CHECK

- 1) Press the EJECT button and unthread.
 - 2) Check that the actuator for the unthreading end switch is not tripped as shown in Fig. 3-20. (Slowly rotate the internal gear by hand and verify by the click sound.)
- * Refer to Paragraph 1-8-2 to thread manually.
Adjust according to Paragraph 3-15-2 if necessary.

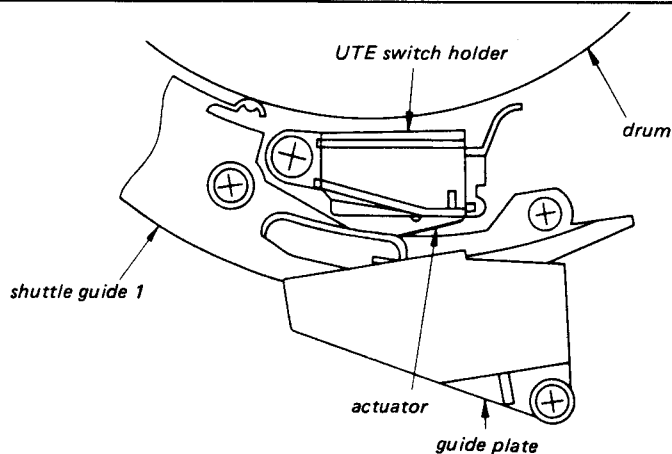


Fig. 3-20. UTE Switch

3-10. S THREADING RING REPLACEMENT AND ADJUSTMENT

3-10-1. Preparation for Removal of S Threading Ring

Remove ACE assembly, FE Head and Threading Motor. (Fig. 3-21)

- 1) Unscrew the Phillips head continuous-thread stepped screw ①.
- 2) Remove the No. 6 guide nut ②, washer ③, spacer ④ and compression coil spring ⑤. Use a special notched screwdriver. (See Section 1-9. Tools And Fixtures Required)
- 3) Remove the two guide adjusting nuts ⑥ and the ACE assembly and FE head.

Caution:

ACE assembly and FE head are connected by a lead. Be careful when removing them. The compression coil spring underneath the ACE assembly does not have to be removed. However, be careful not to lose it.

- 4) Unscrew two screws ⑦ and remove the STOPPER ARM ASSEMBLY BLOCK ⑧.
- 5) Unscrew the two screws ⑨ and pull the threading motor assembly up to remove.

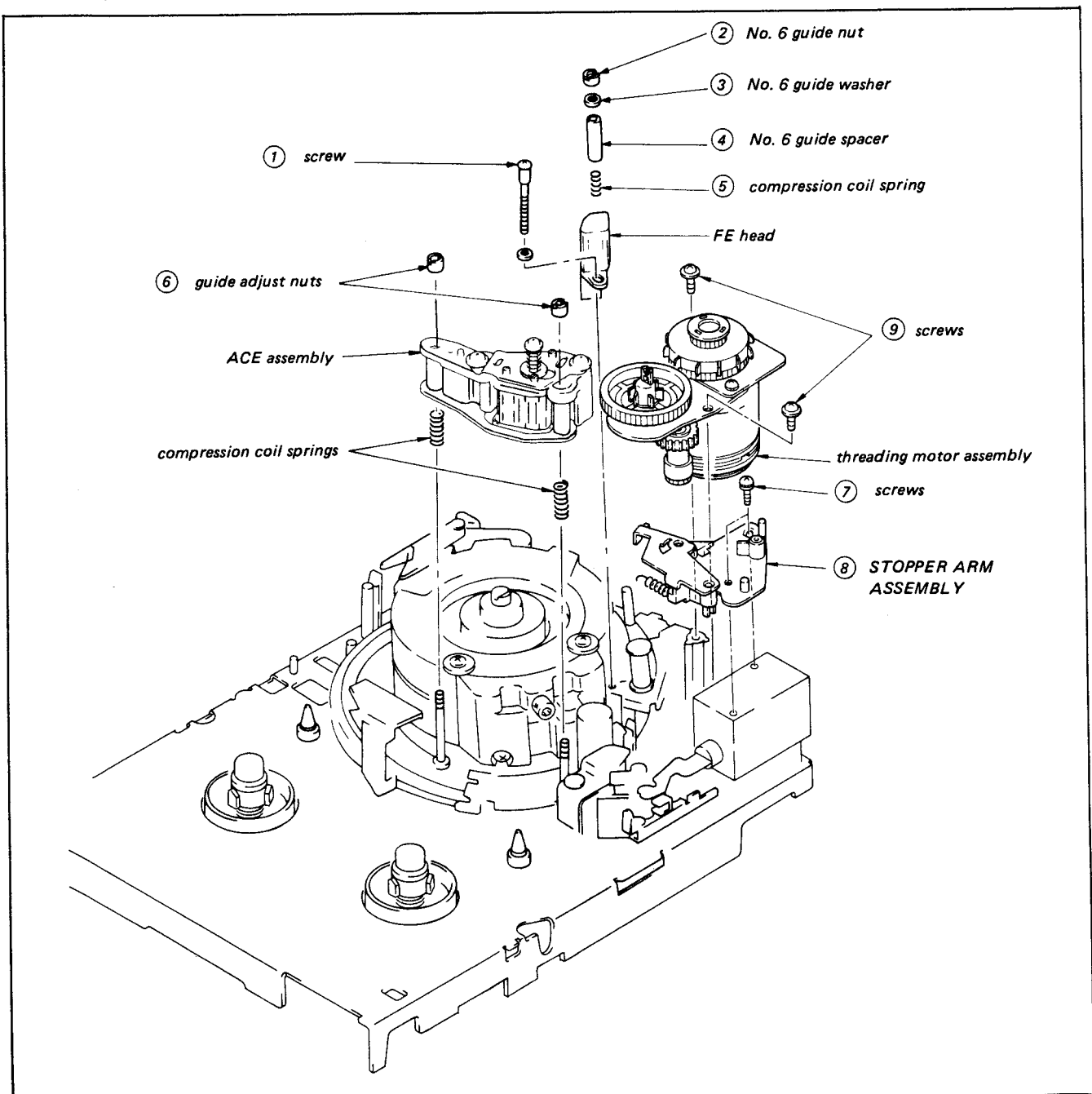


Fig. 3-21. Dismounting ACE Assembly, FE Head, and Threading Motor

[Removal of Other Parts] (Fig. 3-22)

- 1) Measure the gap between the upper drum and the adjust plate as for replacement of the drum assembly. (Fig. 3-5)
- 2) Unscrew the two screws ① and remove the tape guide ground plate ② and adjust plate ③
- 3) Unscrew the two screws ④ and remove the tape holder assembly ⑤
- 4) Unscrew screw ⑥ and remove the guide plate ⑦

- 5) Unscrew the two screws ⑧ and five screws ⑨ to remove the shuttle guide (1-YA) ⑩ and (2) ⑪ as well as the slant base assembly ⑫
- 6) Unscrew screw ⑬ and remove the pin link liner plate ⑭

Caution:

When the guide plate is removed, do not thread or unthread with the shuttle guide mounted.

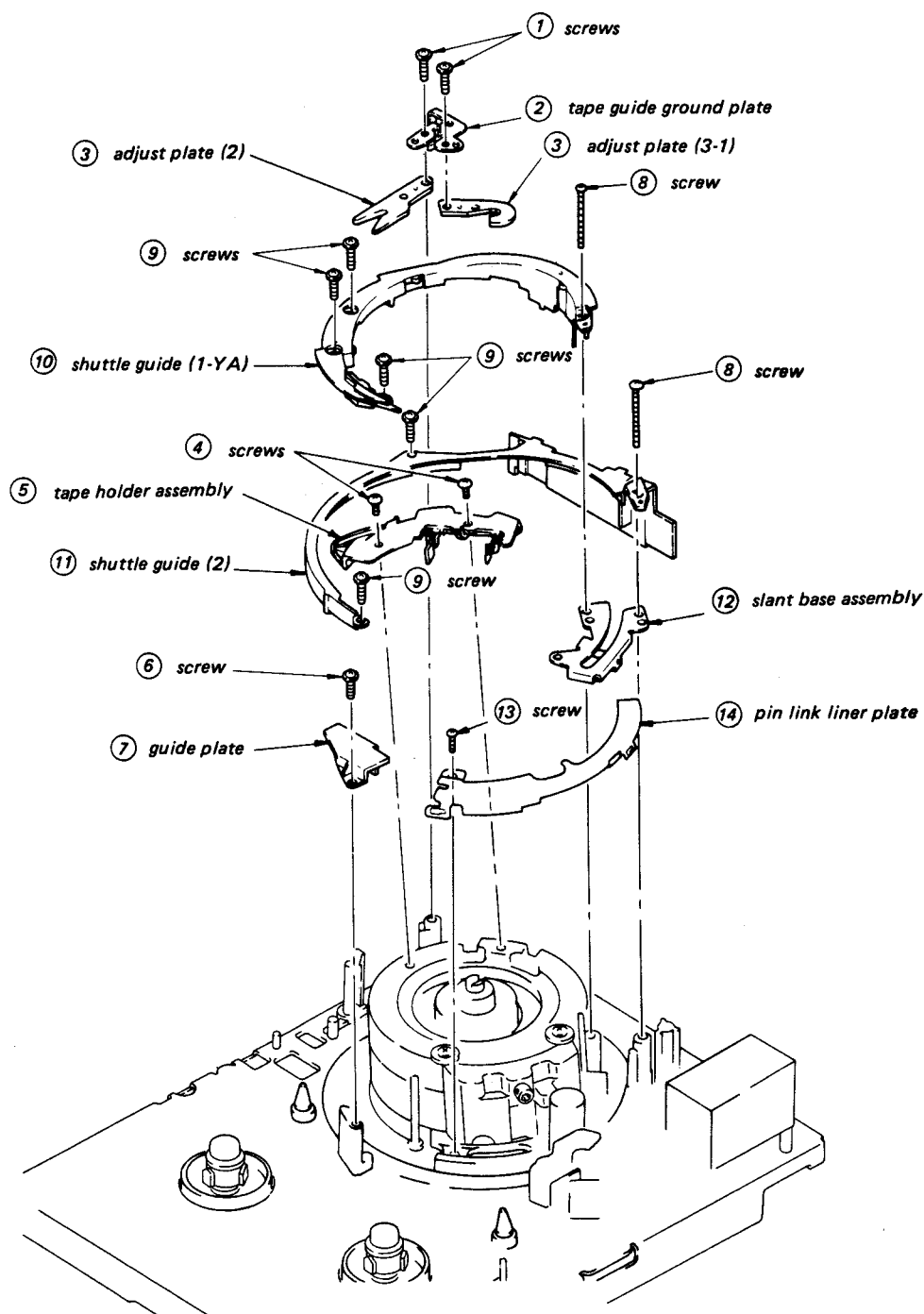


Fig. 3-22. Removing Other Parts

3-10-2. Removal of S Threading Ring (Fig. 3-23)

- 1) Remove the spring of the lock arm assembly. (Refer to Paragraph 3-15-1, Fig. 3-34)
- 2) Remove stop washers ① and ring rollers ②, ③.
- 3) Remove the UTE switch subassembly. (Refer to Paragraph 3-15-2, Fig. 3-38)
- 4) Unscrew screw ④ and remove the ring roller adjustment plate ⑤ and ring roller ⑥.
- 5) Remove the S threading ring ⑦.

Caution:

Do not use the same washer twice.

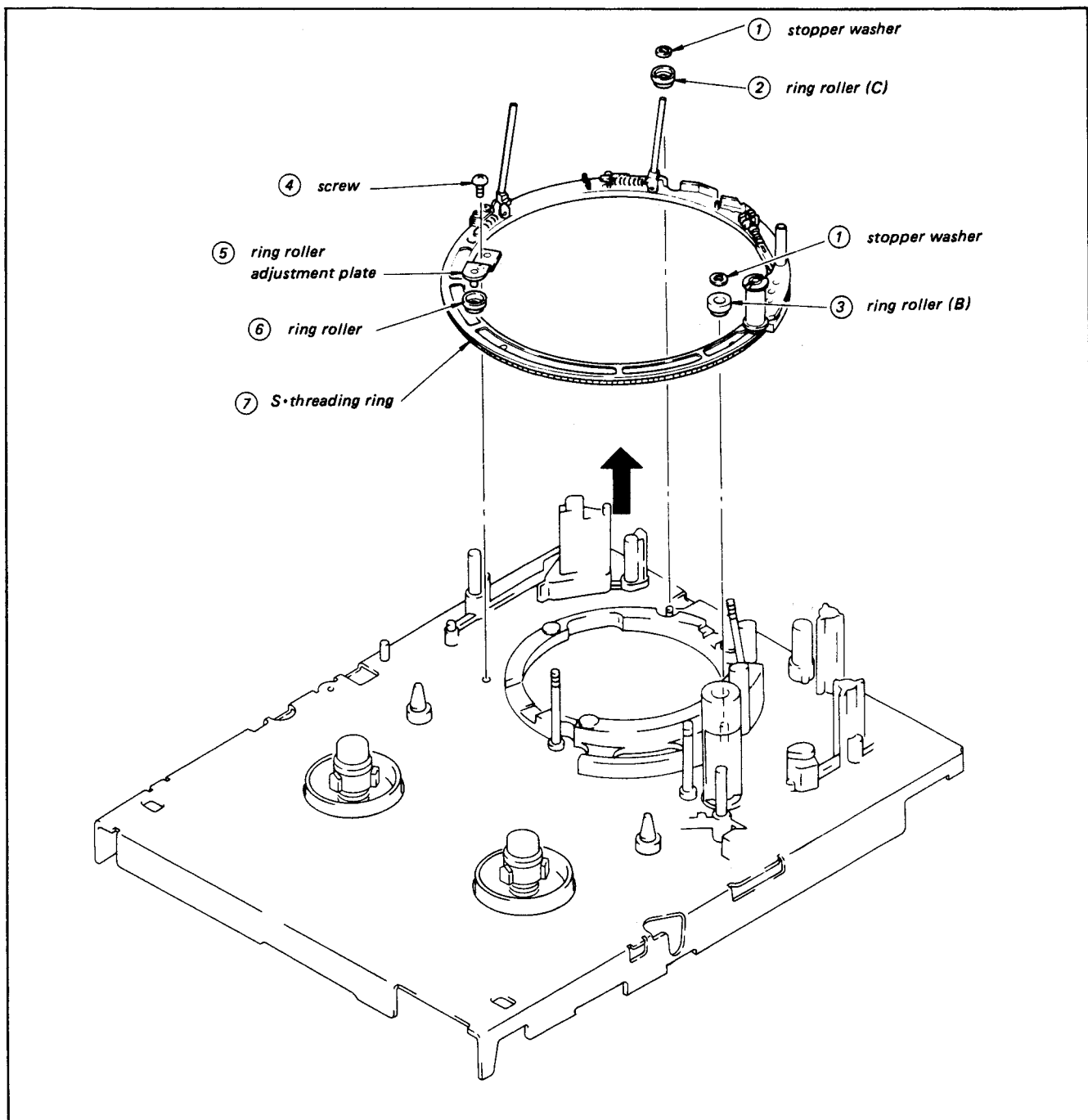


Fig. 3-23. Removing S Threading Ring

3-10-3. Removal of No. 2 Guide

- 1) Unscrew the screw (1x3) ①.
- 2) Unscrew the screw (1.4x3) ②.
- 3) Remove the No. 2 guide ③.

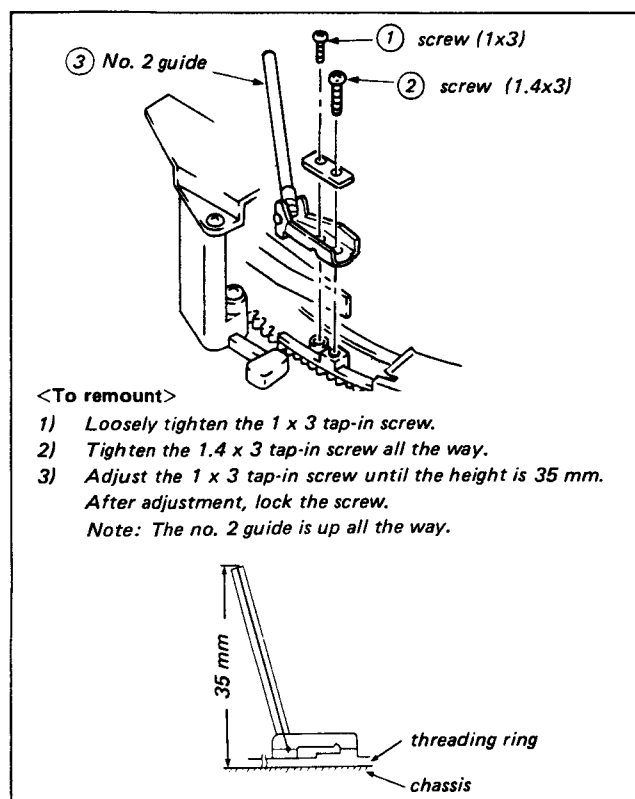


Fig. 3-24. Removal of No. 2 Guide

3-10-4. Removal of No. 3 Guide

- 1) Unscrew the screw (1x3) ①.
- 2) Unscrew the screw (1.4x3.5) ②.
- 3) Remove the No. 3 guide ③.

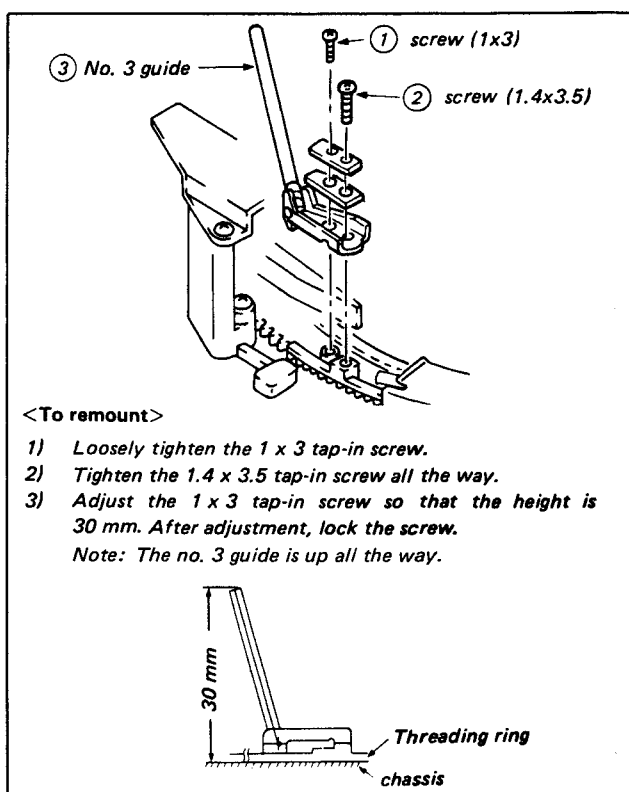


Fig. 3-25. Removal of No. 3 Guide

3-10-5. Checking Slider Stopper Mounting (Fig. 3-26)

- 1) Check that the drive gear is engaged.
- 2) Loosen screw ①, insert a spacer ($t = 0.2$) between the slider gear and slider stopper, then tighten screw ① while pushing in the directions of arrows A and B

Caution:

Make sure to push it in direction A to eliminate any play. The slider stopper rotates in the direction of arrow C when screw ① is tightened. Therefore, tighten the screw while holding it with a blade-tip screwdriver.

3-10-6. Replacement of S Threading Ring (Fig. 3-27)

- 1) Mount the S threading ring.
- 2) Set the slider gear assembly in the unthreading complete position.
(Insert a 0.5 mm spacer between the slider stopper and slider gear as shown in Section A.)
- 3) Rotate the S threading ring in the direction of the arrow a and align the mechanism chassis hole ($\phi 3$) and S threading ring hole ($\phi 1.5$) of the section B.
- 4) Mesh the drive gear assembly with the S threading ring and fit them into the mechanism chassis.
- 5) Reassemble after repositioning the gearing of the drive gear assembly and S threading ring gear if the hole positions do not match.

Note:

Adjust the ACE assembly in accordance with Section 4 for tape path adjustment after changing and mounting the S threading ring.

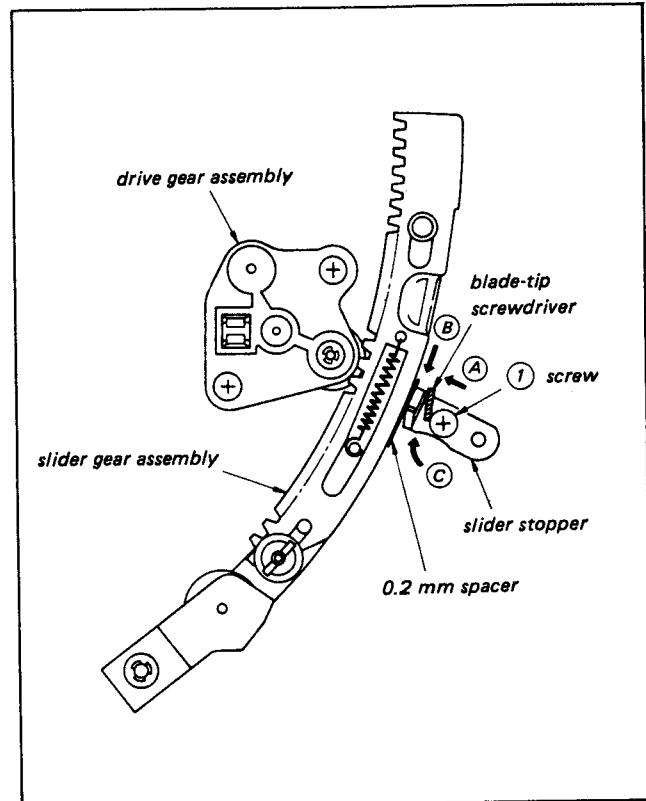


Fig. 3-26. Mounting Slider Stopper

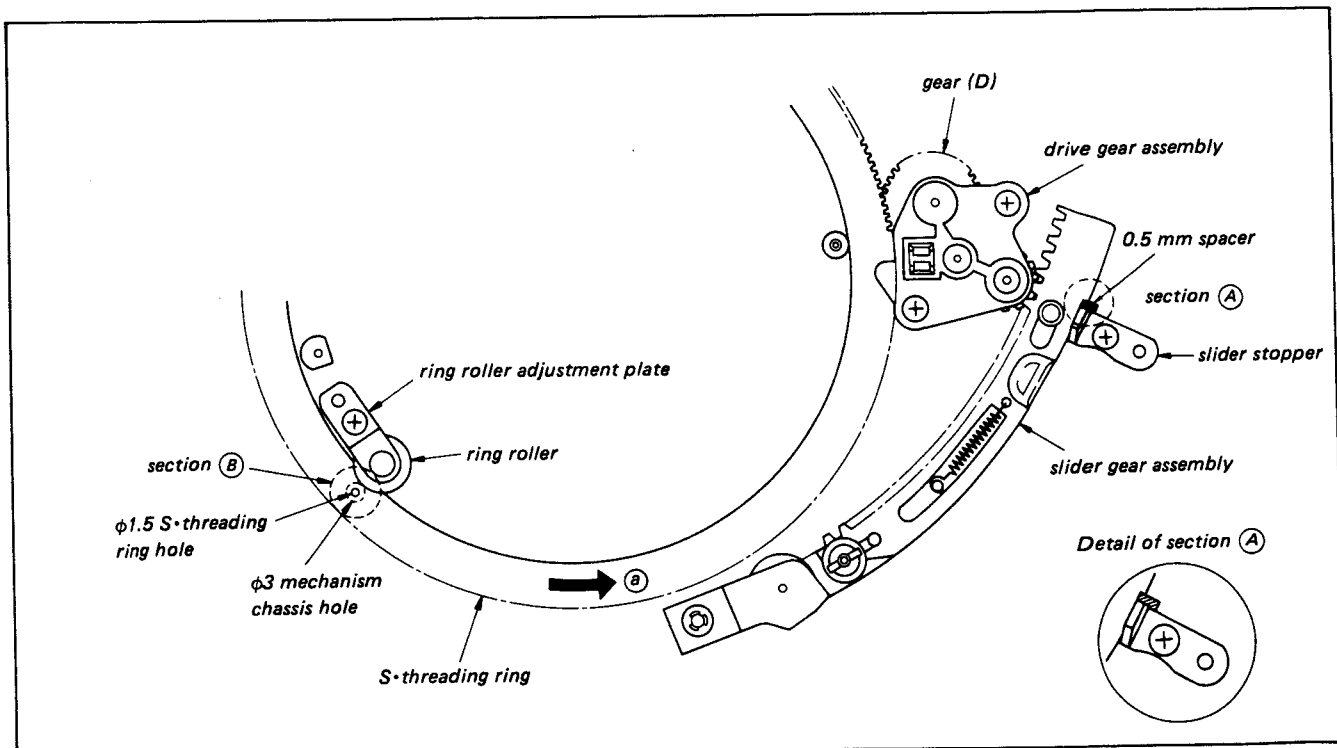


Fig. 3-27. S threading Ring Position Adjustment

3-11. CHECK AND ADJUSTMENT OF PINCH PRESS LIMITER CLEARANCE

[Check Procedure]

- 1) Set up a threading completed state.
- 2) Check that the clearance "t" of the pinch press limiter in Fig. 3-28 is 0.4 — 0.6 mm. If not, adjust as follows:

[Adjustment Procedure]

- 1) Loosen screw ① in Fig. 3-28 with the pinch solenoid held in.
- 2) Move the pinch limiter adjust plate (shaded in the diagram) fully in the direction of arrow ①. The clearance "t" at this time is 0.
- 3) Push the pinch limiter adjust plate in the direction of arrow ② as shown at section A using a blade-tip screwdriver, until the clearance "t" is 0.4 — 0.6 mm.
(Use $\phi 0.4$ and $\phi 0.6$ gauges for clearance adjustment)
- 4) Tighten screw ① and lock it.

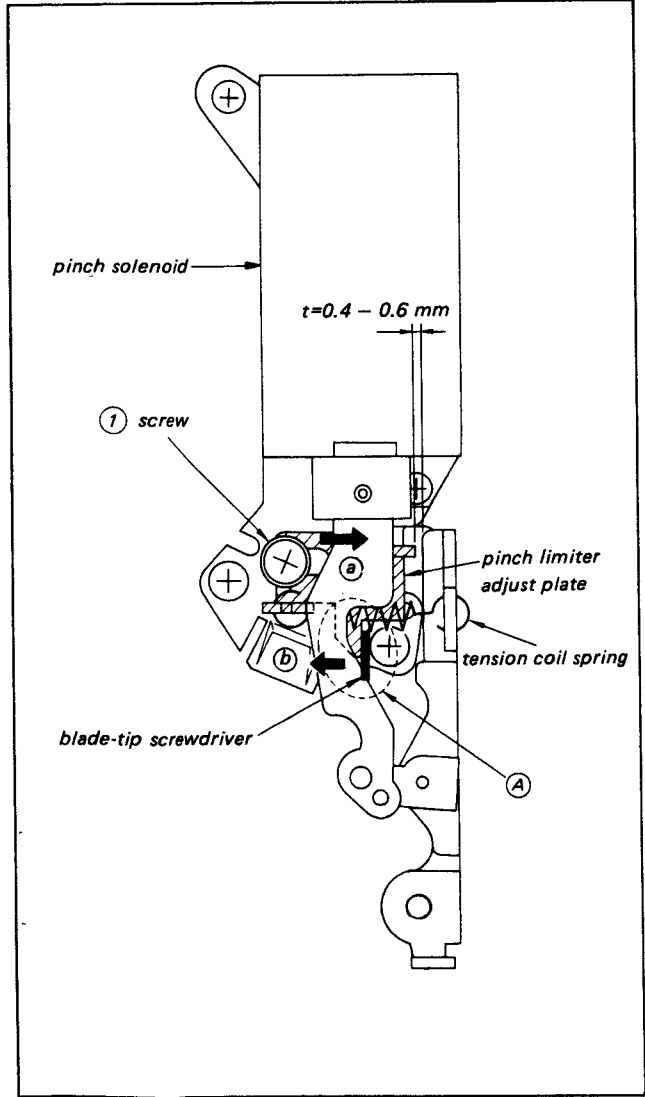


Fig. 3-28. Pinch Press Limiter Clearance Adjustment

3-12. BRAKE PLUNGER POSITION ADJUSTMENT

- 1) Loosen the screw ① securing the brake plunger.
- 2) Adjust the installation position so that the suction stroke of the brake plunger becomes 2 mm.
When the plunger is in the sucked state, S brake should be separated from S reel table.

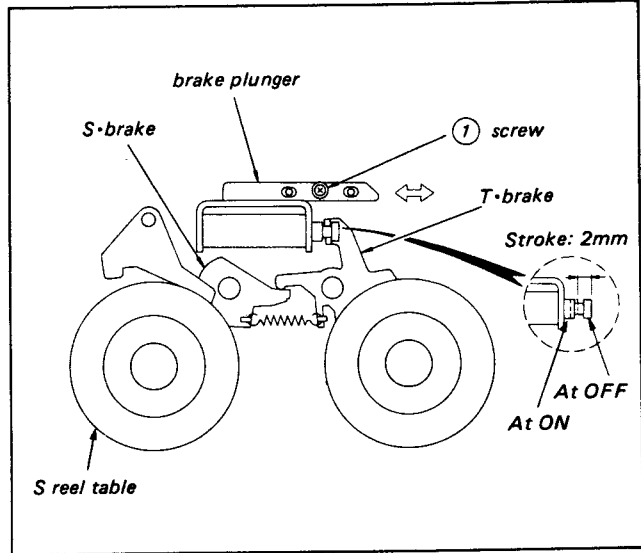


Fig. 3-29. Brake Plunger Position Adjustment

3-13. SOFT BRAKE ADJUSTMENT

[Adjustment Method]

- 1) Place a tension gauge (SL-0011) on the S reel base and hook a sector type gauge as shown in Fig. 3-30.
- 2) Adjust by moving the tension coil spring ① in the direction of the arrow A until the sector type gauge reading is 8 g when the FF mode is set up. (See Fig. 3-31)

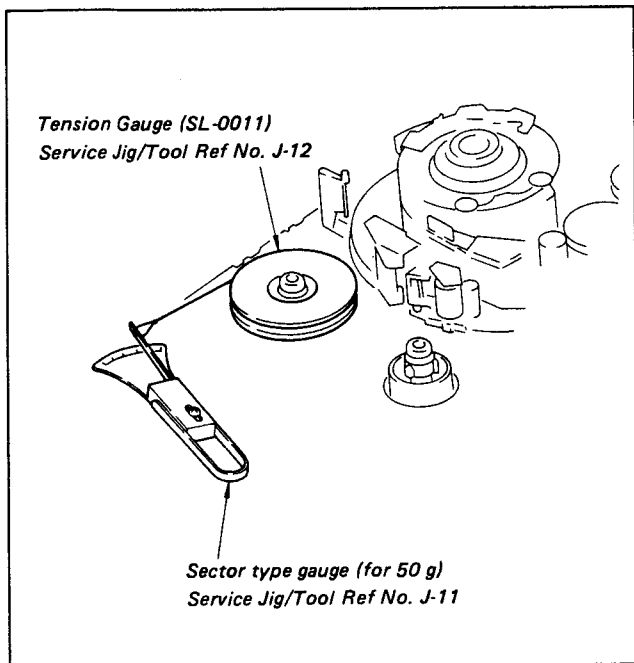


Fig. 3-30. Soft Brake Adjustment-1

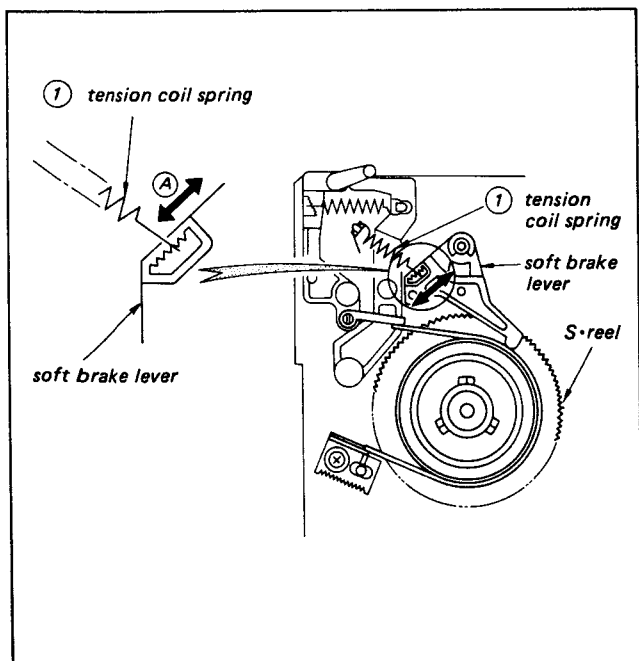


Fig. 3-31. Soft Brake Adjustment-2

3-14. TENSION REGULATOR LEVER POSITION ADJUSTMENT

[Adjustment Method]

- 1) Set up the PLAY Mode.
- 2) Loosen the screw ③ and adjust by moving the tension regulator band assembly ④ in the direction of the arrow A until the tape guide pin (No. 1 guide) of the tension regulator lever assembly ① is positioned inside the outer circumference of the shuttle guide (2) ② as shown in Fig. 3-32.
- 3) After making the adjustment, tighten the screw ③ carefully in order not to move the tension regulator band assembly ④.

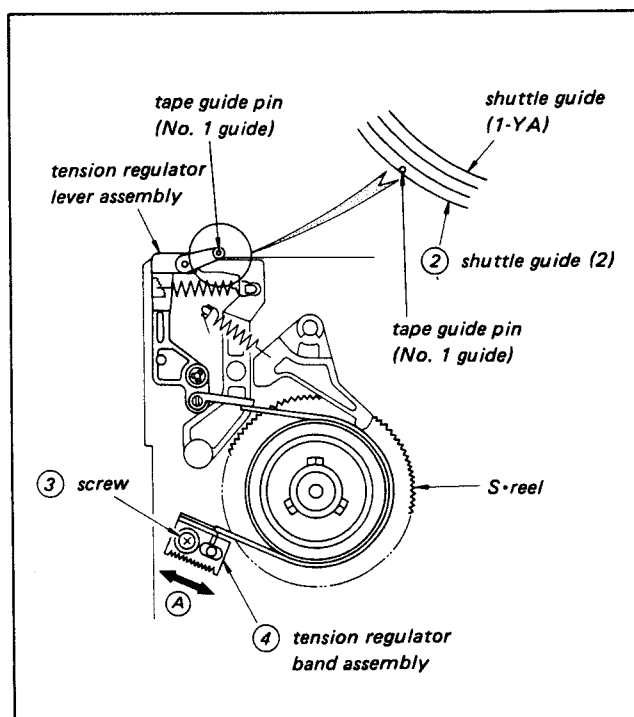


Fig. 3-32. Tension Regulator Lever Position Adjustment

3-15. CHECK AND ADJUSTMENT OF MICROSWITCH POSITION

3-15-1. Check and Adjustment of Threading End Switch (TE Switch) Position

[Check Procedure] (Fig. 3-33)

Rotate the S threading ring by hand and check that the TE switch turns on and off with a clicking noise while the lock roller is moving within the upper 2/3 of the straight portion ℓ of the recess (A) in Fig. 3-33 on the ring. If not, adjust as follows.

[Adjustment Procedure]

- 1) Adjust the lock roller to the position caving from the notch rim tip on the S threading ring, rotate the cam shaft using a blade-tip screwdriver in the direction of the arrow, and secure the cam shaft when the TE switch is turned on (a click tone is audible).
- 2) Check the results of the adjustment following the check procedure above.

[Removal] (Fig. 3-34)

- 1) Unhook the tension coil spring from the lock arm assembly.
- 2) Unscrew screw (1) and remove the TE switch subassembly.
- 3) Push the hook on the main chassis assembly in the direction of the arrow to unhook, and remove the lock arm assembly.

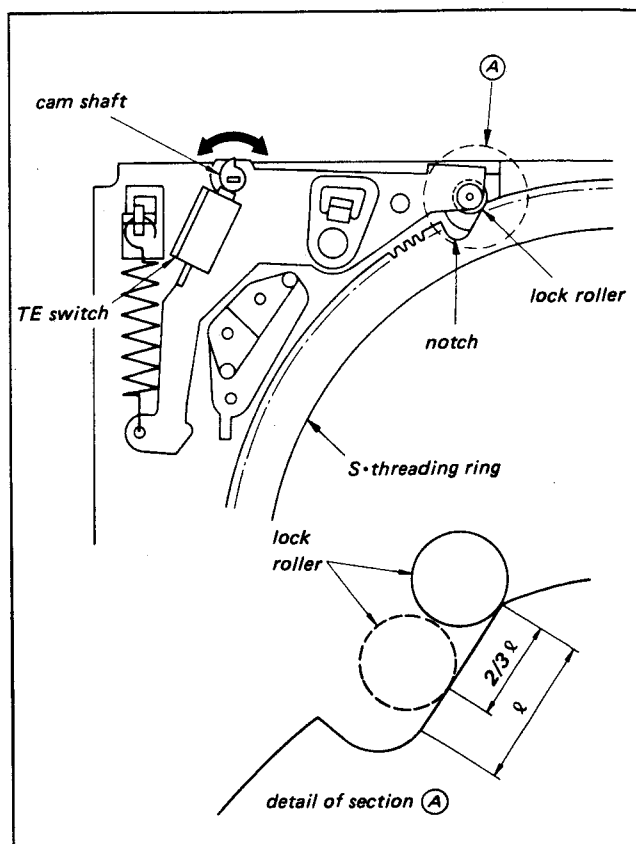


Fig. 3-33. TE Switch Position Adjustment

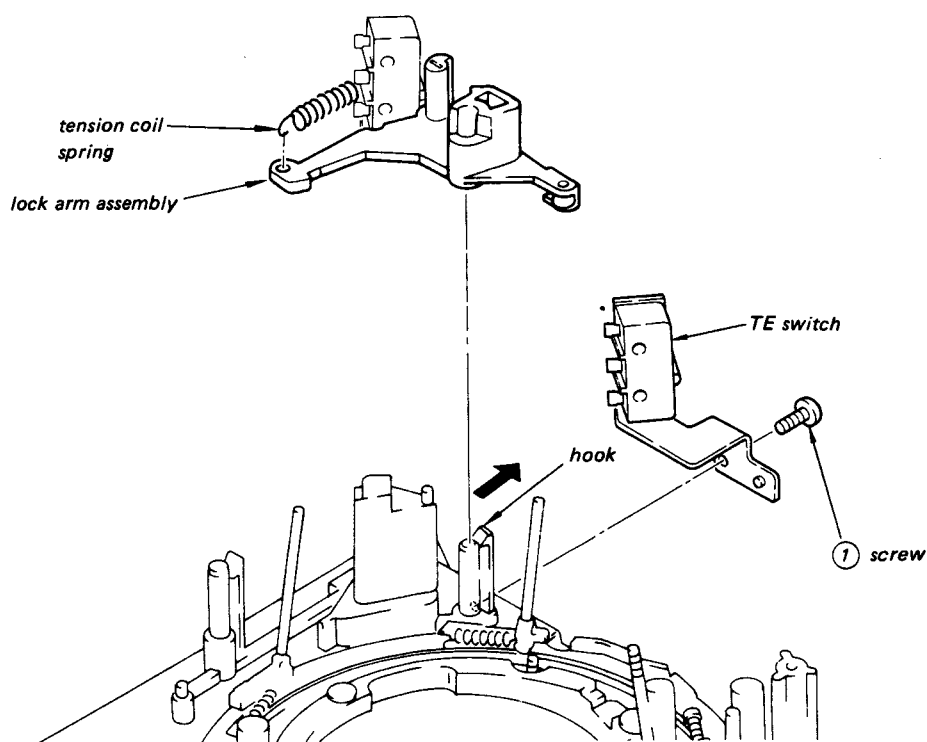


Fig. 3-34. Removing TE Switch and Lock Arm Assembly

3-15-2. Check and Adjustment of Unthreading End Switch (UTE Switch) Position

[Check Procedure]

Rotate the S threading ring by hand. Verify that the switch trips when a pin of $\phi 1.2$ is inserted at section (A) in Fig. 3-35 after the UTE switch arm roller assembly has dripped into the UTE switch cam groove. Verify that the switch does not trip when a pin of $\phi 0.6$ is inserted.

[Adjustment Procedure]

- 1) If the switch does not trip when the $\phi 1.2$ pin is inserted, loosen small screw ① and adjust by moving in the direction of the arrow little by little.
- 2) The switch actuator is bent as shown in Fig. 3-36 when the switch turns on after inserting a $\phi 0.6$ pin. Check the adjustment.

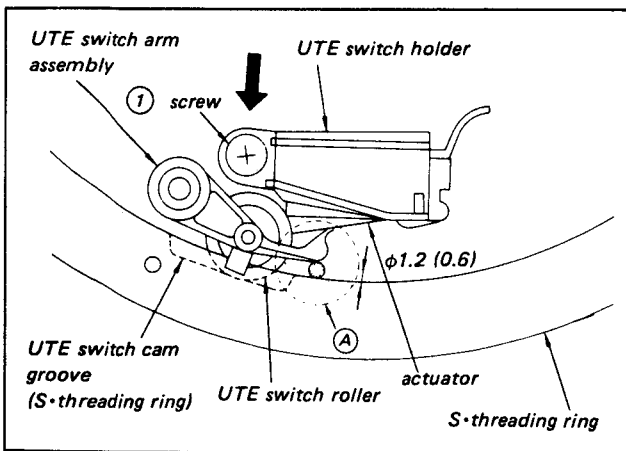


Fig. 3-35. UTE Switch Position Adjustment

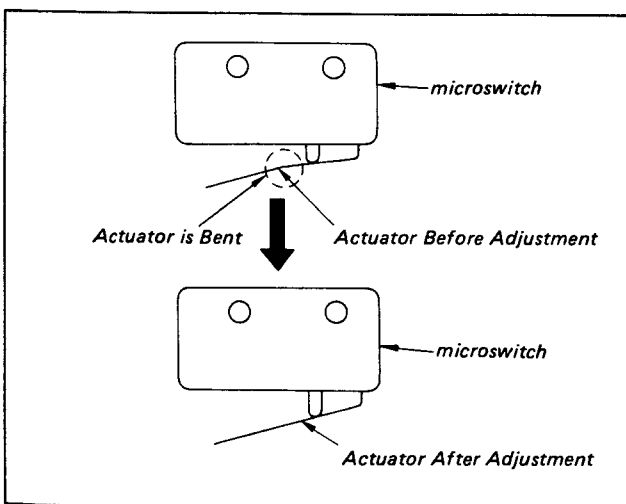


Fig. 3-36. Actuator Adjustment

Caution:

Insert the $\phi 1.2$ and 0.6 pins into their correct positions as shown in Fig. 3-37. (Even when the clearance at the entrance is 1.2 mm on construction, depending on the pin insertion positions as shown in Fig. 3-37, the clearance inside is less than 1.2 mm).

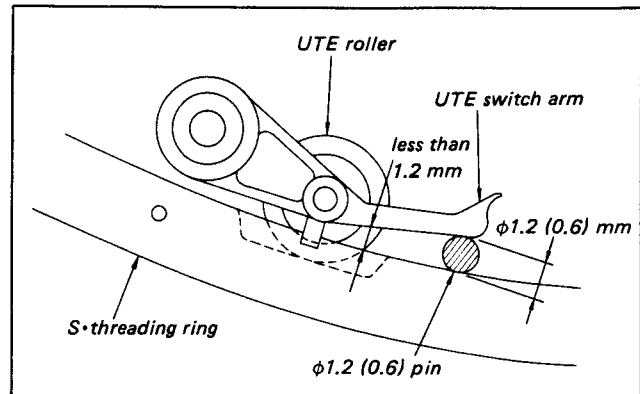


Fig. 3-37. Pin Position During Checking

[Removal]

- 1) Unscrew screw ① as shown in Fig. 3-38.
- 2) Release the switch hook ② from the chassis and remove the switch body while pushing the actuator to the "ON" position.

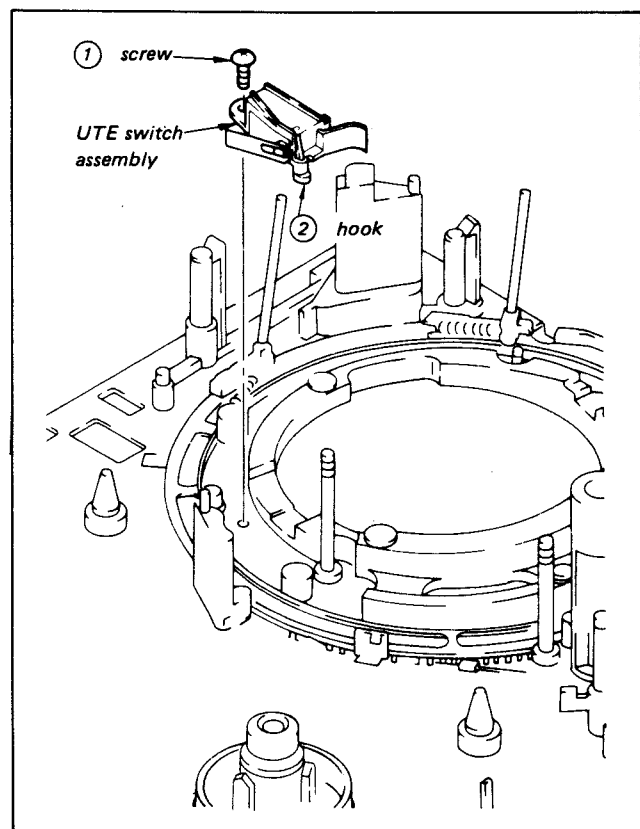


Fig. 3-38. Removing UTE Switch

3-16. FORWARD/BACK TENSION MEASUREMENT

Perform this measurement using torque cassette SL-0003C according to the procedure below.

[Procedure]

- 1) Remove the upper panel so that the tape path is visible.
- 2) Insert the torque cassette and set PLAY mode.
- 3) Read the S reel side meter after the indicator has made about one revolution.

Specified Value $30 \pm 5 \text{ g} \cdot \text{cm}$

[Note:

- i) Be sure the set is level when measuring.
- ii) After measuring, the tape may go slack if the STOP button is pressed, so put the set into forward mode first, to remove the slack, then the tape can be ejected.

[Adjustment]

Adjust the position of the tension coil spring on the tension regulator lever assembly in the direction of the arrow (A) so that measured values become $30 \pm 5 \text{ g} \cdot \text{cm}$ to conform to the standard.

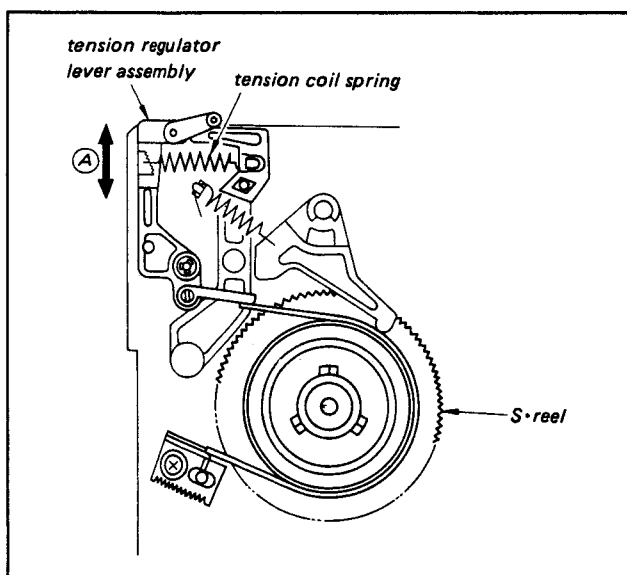


Fig. 3-39. Back Tension Measurement

3-17. FORWARD TORQUE ADJUSTMENT

Perform this measurement using torque cassette SL-0003C according to the procedure below.

[Procedure]

- 1) Insert the torque cassette and set RECORD mode.
- 2) Adjust RV309 of SS-22 board so that the reading of the take-up side becomes $80 \pm 5 \text{ g} \cdot \text{cm}$.

[Note:

Upon RECORD mode, auto shutoff may occur, entering STOP mode. This is due to the construction of the torque cassette (the action of the built-in spring). The spring acts when the take-up reel table stops momentarily. In this case, either readjust by pushing the REC button, or adjust as follows.

1. Unplug connectors CN311 and 312 from SS-22 board.
2. Connect pin ② of CN351 and pin ② of CN311 with a 47 kohm resistor.
3. Adjust.

SECTION 4

TAPE PATH ADJUSTMENT

4-1. TRACKING ADJUSTMENT

This adjustment has significant effect on picture quality in each mode and tape interchangeability, so please perform it very carefully.

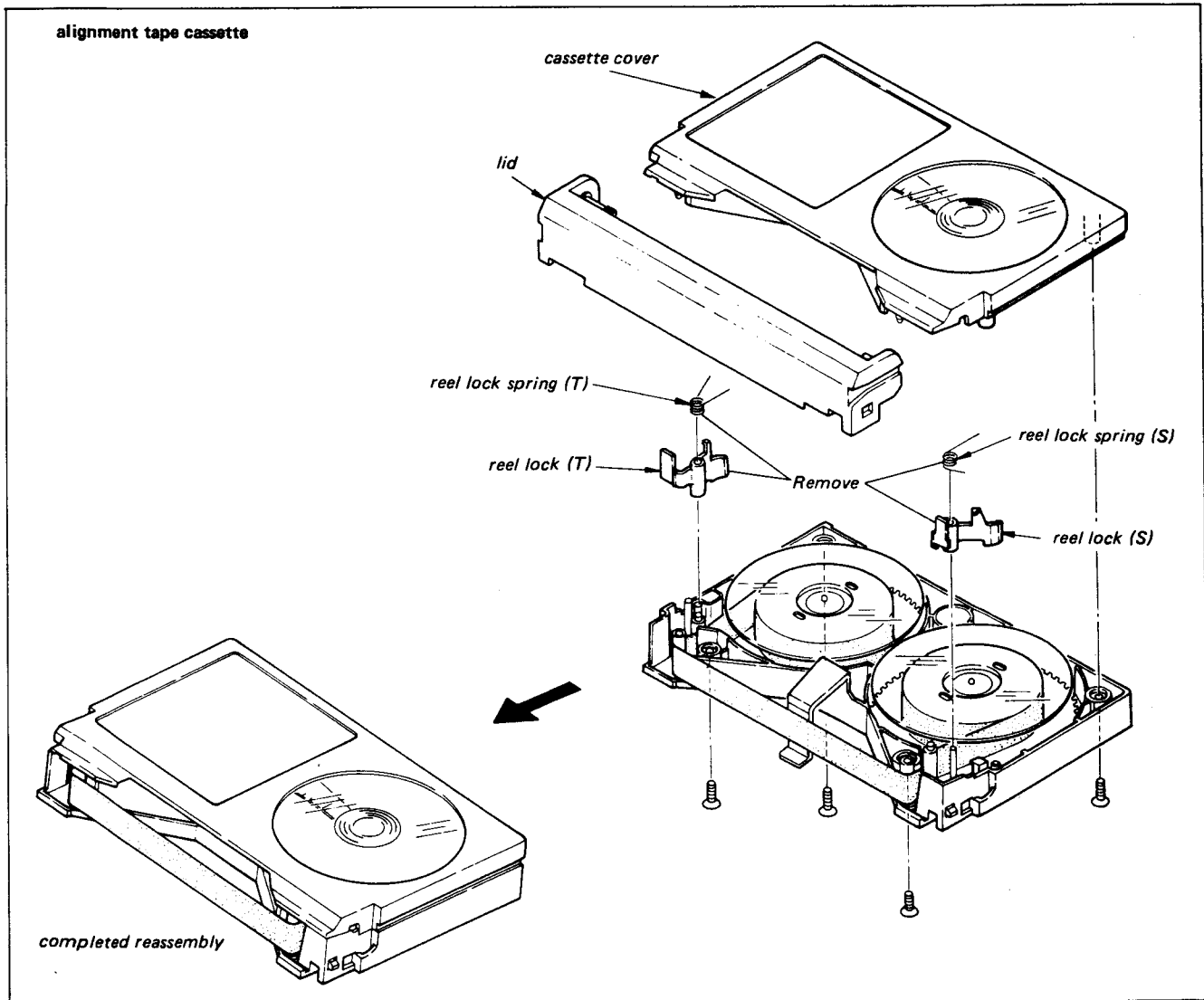


Fig. 4-1. Cassette Holder Remodeling

4-1-1. Preparation

- 1) When modifying alignment tape KR5-2H, use caution not to dislodge the tape reels from their correct position. Refer to Fig. 4-1 and remove the four screws that secure the upper cover to the lower cover.
Remove the upper cover and lid. Separate the lid and lid tension spring from the upper cover. Remove the two reel lock springs (T and S) and the two reel locks (T and S). Remount only the upper cover, being certain that it is properly mated with the lower cover. Secure the covers with four screws. NOTE — If the reel locks, and related springs are not removed from the cassette, the tape will load but will not thread. In this case the cassette will be ejected from the VCR approximately eight seconds after being loaded into the VCR.
- 2) Clean the tape contact surfaces (tape guides, drum, capstan shaft, pinch roller, ACE FE head surface) with chamois dampened with methanol.
- 3) Oscilloscope connections:
1ch: CN002—④ (RY-2)
2ch: CN002—⑥ (RY-2)
- 4) Play back the tracking portion of the modified KR5-2H alignment tape.
- 5) Confirm that the RF output waveform is flat, with maximum amplitude. (The waveform should increase and decrease, remaining flat, when the tracking control knob is turned back and forth.) Also, when the waveform is maximum, confirm that the RF output waveform variation and contact satisfy the specifications shown in Fig. 4-2. If they do not, follow the instructions in 6).
- 6) If the tracking control knob is turned and the entrance waveform does not flatten as shown in Fig. 4-3(a), perform the entrance side adjustment in 4-1-2. If the exit waveform does not flatten as shown in Fig. 4-3(b), perform the exit side adjustment in 4-1-3.

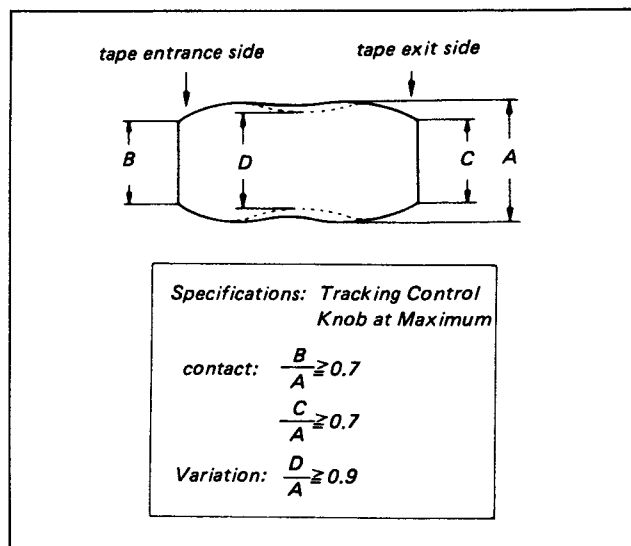
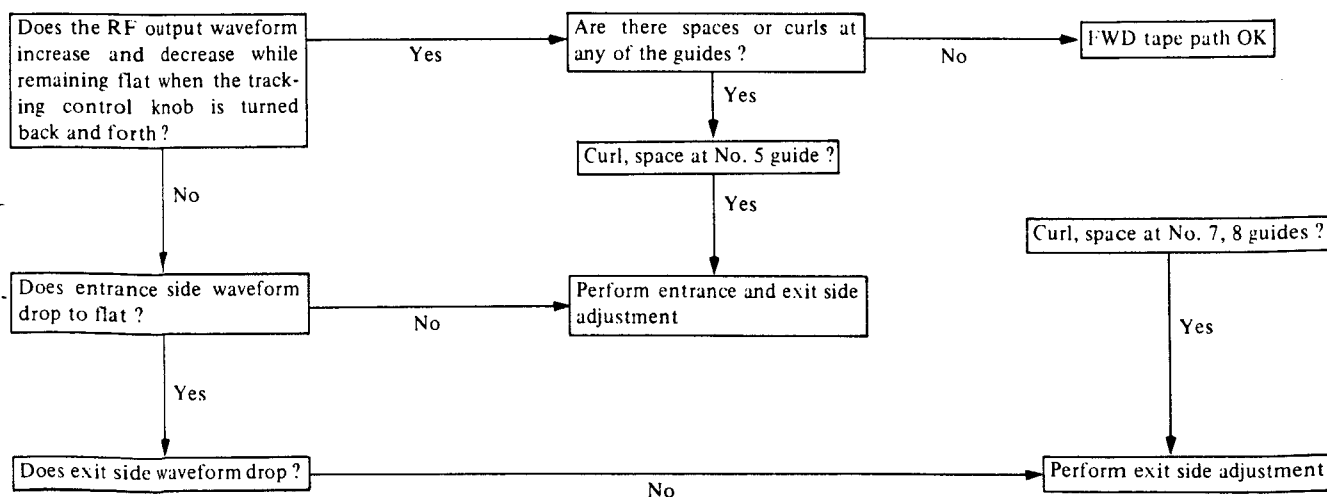


Fig. 4-2.

	BOARD	CONNECTOR & PIN NO.
RF Output Waveform	RY-2	CN002-4
External Trigger	RY-2	CN002-6
Audio Out	YC-26	AUDIO OUT
Video Out	YC-26	VIDEO OUT

Waveform Confirmation



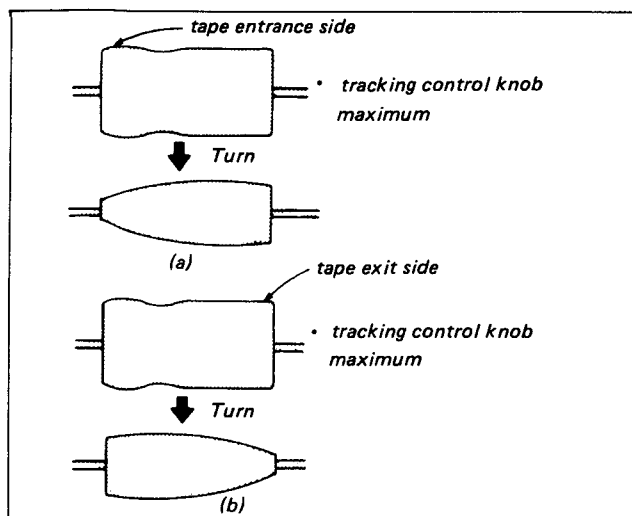


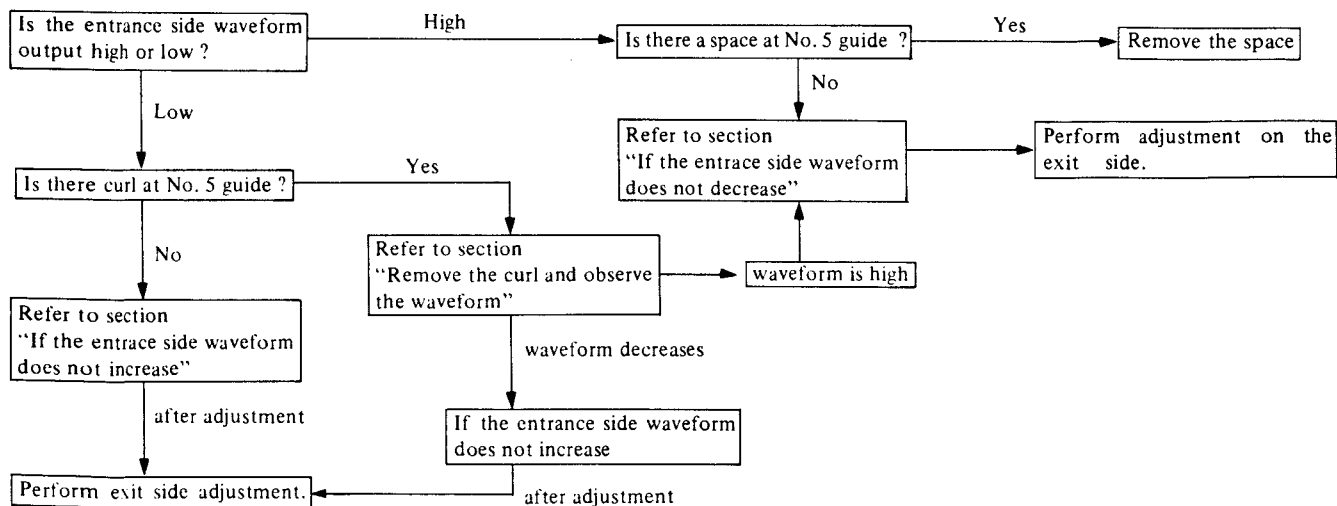
Fig. 4-3.

Note: After the indicated tape path adjustments that follow have been successfully completed using normal playback speed, operate the VCR in the Speed Search mode and look for curl at the tape guides. Readjust them if necessary. Then, finally, playback a regulator L830 tape as a check-up. See Section 4-4.

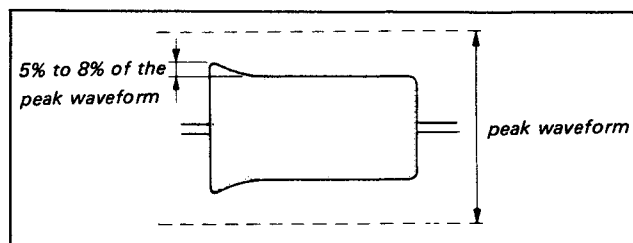
4-1-2. Entrance Side Adjustment

Always perform the exit side adjustment as well as the entrance side adjustment. Fig. 4-4 illustrates the guides and adjustment locations.

Entrance Side Flow Chart



- 1) Turn tracking control knob counterclockwise to drop RF output waveform to about 60% of maximum.
- 2) Turn No. 6 guide counterclockwise to free tape transportation to the drum. Use a special notched screwdriver. (See Section 1-9. Tools And Fixtures Required)
- 3) Loosen No. 5 guide lock screw ①, turn No. 5 guide so that the entrance side waveform is almost flat, as shown in the figure below, and tighten lock screw ①. (See Fig. 4-5)



Note:

Be sure that the waveform remains as shown in the figure after tightening the lock screw ①.

- 4) Next lower No. 6 guide and flatten the waveform.
- 5) Push the tape down between No. 4 and No. 5 guides by hand, and confirm that the entrance side RF waveform returns to the original state after being lowered. If the waveform is not as illustrated, or if the waveform does not flatten, or takes too much time to flatten after the entrance side tape is pushed down, follow the procedure below to adjust.
- 6) Check No. 5 guide for space and curl. If space or curl exists, follow the appropriate adjustment procedure.

Note:

Be sure that there is tape tension upper and lower balance between No. 3 — No. 4 — No. 5 guides. Perform No. 3 or No. 5 guide lateral adjustment if necessary.

Note:

Upon failing to obtain the waveforms shown above, press down the tape at the entrance side, adjust as indicated below when a long time is needed for the waveform to return to the horizontal, or when it does not return at all.

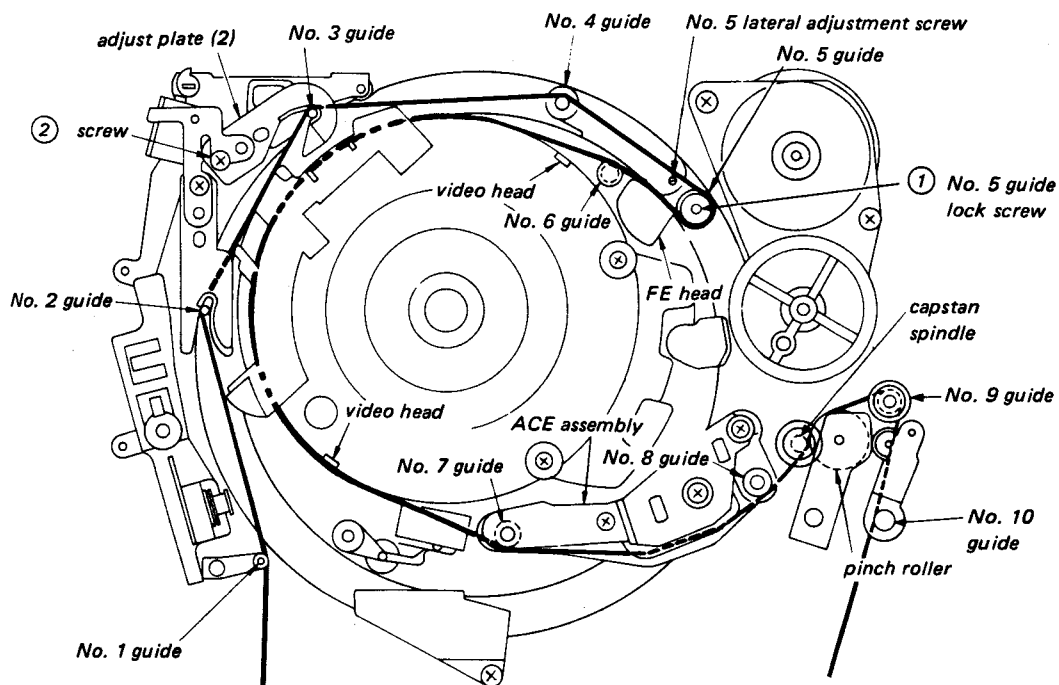


Fig. 4-4. Tape Guide Layout

[If the waveform entrance output does not increase]

- 1) Check to make sure tape upper and lower tension is equal between No. 3 — No. 4 — No. 5 guides. If it is not, perform No. 3 or No. 5 guide lateral adjustment.

Note:

Be sure there is no space at No. 4 guide lower flange.

- 2) Raise No. 4 guide lower flange to raise entrance output.

Note:

No. 4 guide lower flange may be raised 0.4 mm from its lowest position.

- 3) If the waveform does not increase in step 2), turn No. 5 lateral adjustment screw slightly (less than 360°) counterclockwise.

[If there is space at No. 5 guide]

Turn No. 4 guide counterclockwise to raise the tape and remove the space at No. 5 guide.

Note:

Be careful not to create a large space at the bottom of No. 4 guide.

[If the waveform entrance output does not decrease]

- 1) Move the No. 3 guide adjust plate away from the drum, and tighten screw (2) at the point just before the lower tension of the tape loosens.
- 2) If the tape is touching No. 4 guide lower flange, lower the flange. If it is floating, adjust No. 5 guide laterally.

[If there is curl]

- 1) When there is a space at the bottom of No. 4 guide:
Lean the adjust plate of No. 3 guide toward the outside until the point just before the lower tape tension loosens.
- 2) When there is curl but no space at the bottom of No. 4 guide:
 - i) Confirm that No. 4 guide is not raised too high. Turn clockwise to lower if necessary.
 - ii) If this does not solve the problem, tighten No. 5 guide lateral adjustment screw by turning clockwise until the curl disappears.

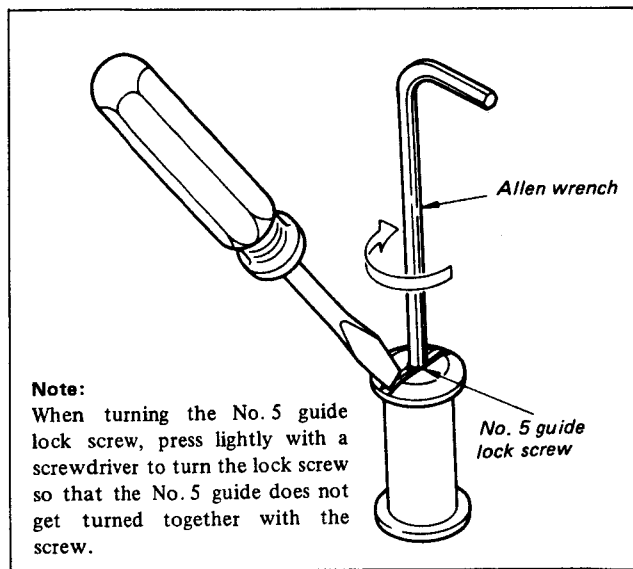


Fig. 4-5.

4-1-3. Exit Side Adjustment

- 1) Turn the tracking control knob counterclockwise to lower the RF output waveform to about 60% of the maximum.
- 2) Raise No. 7, 8 guides to free the tape transportation, and check the waveform. (This waveform is called "exit free waveform".)

Note:

Be careful not to raise the guides too much. They should be raised about 0.3 mm, and also, the tape should not touch the ACE head bottom flange. (Fig. 4-6)

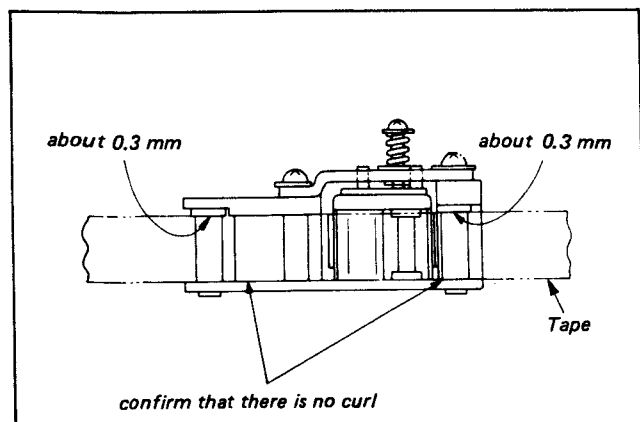


Fig. 4-6.

- i) If the exit free waveform is within the range illustrated in Fig. 4-7(a), (b), proceed with exit side adjustment.
- ii) If it is not within the specified range, follow the adjustment procedure in 4-3.

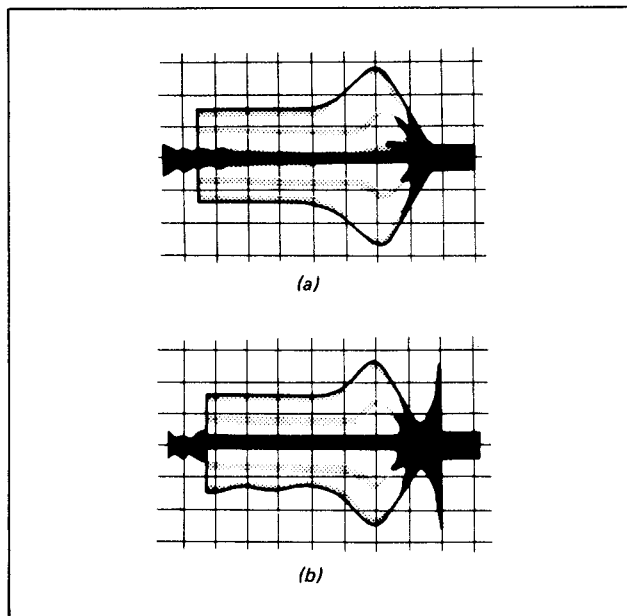


Fig. 4-7.

- 3) Flatten the waveform with No. 7 guide, and match No. 8 guide to the tape. (Lower the guide to the point just before the waveform changes, and where there is no curl.) At this time, the exit side waveform may rise slightly, so lower No. 7 guide again to flatten it, and match No. 8 guide to the tape.
- 4) Confirm that there is no curl at No. 7, 8 guides in forward mode.
- 5) Confirm that curl and space do not appear at No. 8 guide in reverse mode. If curl or space appears, adjust with No. 9 guide.

4-2. ADJUSTMENT AFTER REPLACEMENT OF THE ACE ASSEMBLY

Perform the following adjustments after removing or replacing the ACE assembly.

4-2-1. Tracking Adjustment

- 1) Position the parallel plate (Fixture, SL-0657) at shown in Fig. 4-8, and turn audio head lateral adjustment screw ① to adjust the audio head vertically.

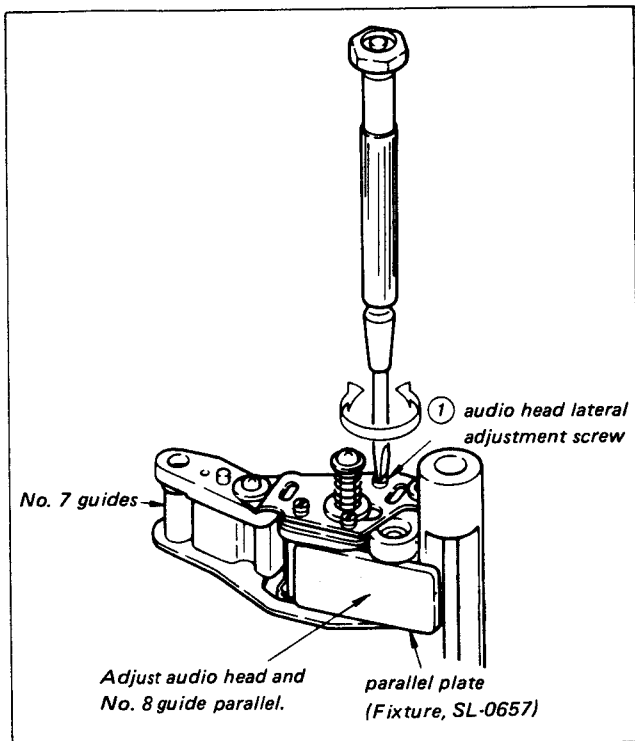


Fig. 4-8.

- 2) Turn the tracking control knob counterclockwise to lower the RF output waveform to about 60% of the maximum.
- 3) Play back the tracking portion of the alignment tape KR5-2H raise No. 7, 8 guides about 0.3mm and check the exit free waveform of the RF output waveform.

Note:

Be sure that the tape does not touch the bottom flange of the ACE assembly.

- i) If the waveform is within the range illustrated in Fig. 4-7(a), (b), proceed with the adjustment.
- ii) If the exit free waveform appears as shown in Fig. 4-9, turn the ACE lateral adjustment screw clockwise until the waveform is within the range illustrated in Fig. 4-7(a), (b).
- iii) If the exit free waveform appears as shown in Fig. 4-10, turn the ACE lateral adjustment screw counterclockwise to obtain the waveform shown in Fig. 4-9, then turn clockwise again until the waveform is within the range shown in Fig. 4-7.

- 4) Turn the No. 7 guide to flatten the waveform, and match the No. 8 guide to the tape. (Lower the guide until the point just before curl appears at No. 8 guide flange.)
- 5) If the RF output waveform is as shown in Fig. 4-9, where the exit side is not flat, lower No. 7, No. 8 guides again to flatten it.

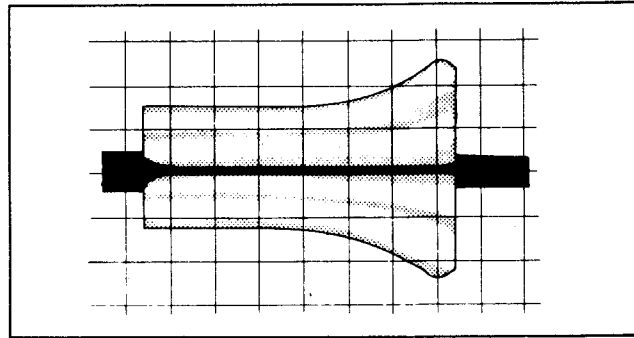


Fig. 4-9.

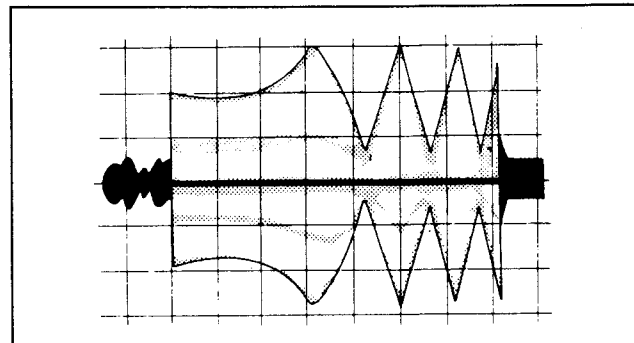


Fig. 4-10.

4-2-2. Audio Head (ACE Assembly) Azimuth Adjustment

- 1) Connect the oscilloscope as follows:
CN501 1 pin (AS-8 board)
Play back the 5 kHz portion of the alignment tape.
- 2) Turn the azimuth adjustment screw (Fig. 4-11) so that the amplitude of the 5 kHz waveform is maximum.

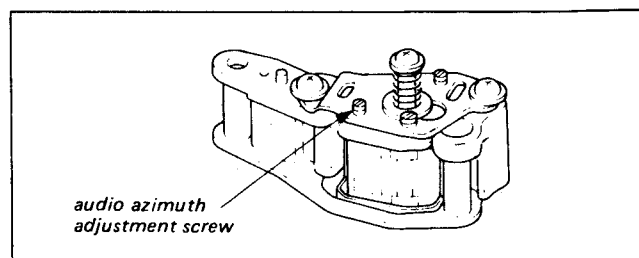


Fig. 4-11.

4-2-3. CTL Head (ACE Assembly) Position Adjustment

This adjustment is both mechanical and electric: mechanically, it is the adjustment of the CTL head position, and electrically, it is the tracking control center adjustment. The procedure involves performing the electrical adjustment first, then the head position adjustment.

- 1) Connect the oscilloscope as follows:
1ch: CN2.....5 pin (RY-2 board)
2ch: CN501.....1 pin (AS-8 board)
External trigger: CN2.....3 pin (RY-2 board)
- 2) Play back the tracking portion of the alignment tape.
- 3) Turn the tracking control knob back and forth, and confirm that the output waveform level is maximum at the center click position, and that the 0 level of the audio signal is at the point where the RF output waveform Bch waveform appears, as shown in Fig. 4-12.
If adjustment is necessary, proceed as follows.

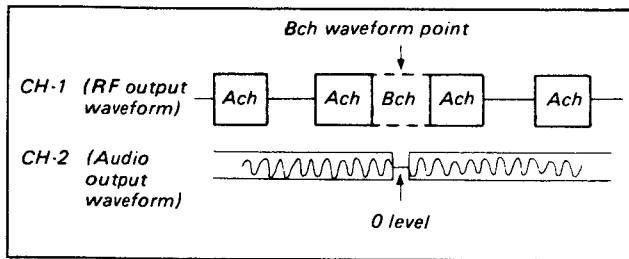


Fig. 4-12.

- 4) Tracking Control Center Adjustment
- 5) CTL Head Position Adjustment
Set the tracking control knob at the center detent position and loosen the two ACE assembly position adjustment screws ①. As shown in Fig. 4-13 slide the ACE assembly with a screwdriver until it is in the position shown in Fig. 4-12 and the RF output waveform is maximum. Tighten the screws ① when this position is obtained.
- 6) Replay the color bars of the alignment tape and check the picture quality.

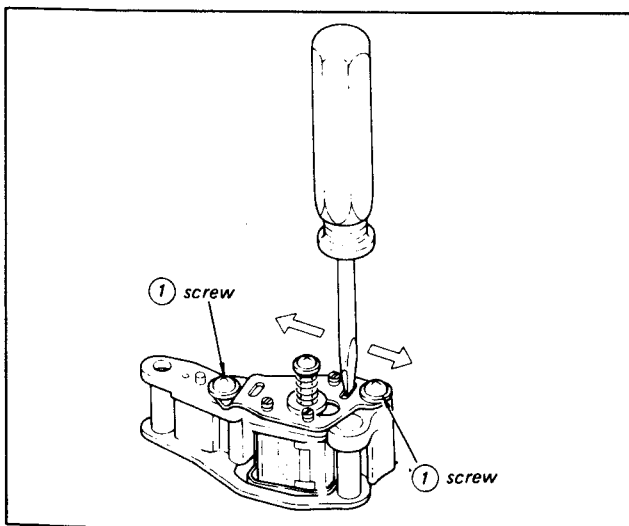


Fig. 4-13.

4-2-4. Audio Head (ACE Assembly) Height Adjustment

Perform this adjustment only after completing the exit side tracking adjustment.

- 1) Oscilloscope connection:
1ch: CN501.....1 pin (AS-8 board)
Replay the 5 kHz portion of the alignment tape.
- 2) Turn the audio head height adjustment screw ① and the lateral adjustment screw ② (Fig. 4-14) until the audio output waveform amplitude is maximum.

Note:

Both of these adjustment screws should be turned in the same direction at the same angle, less than 30°.

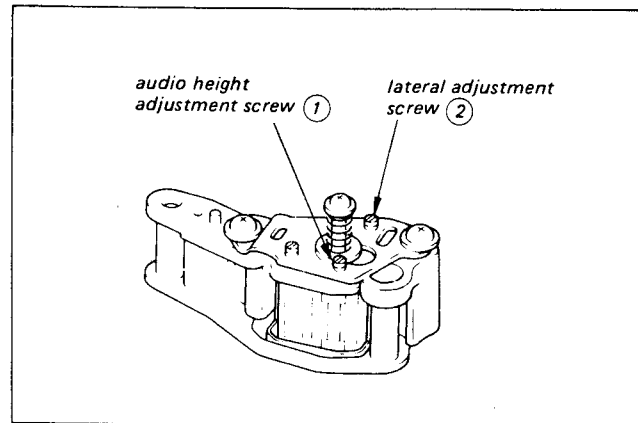


Fig. 4-14.

4-3. ADJUSTMENT AFTER REPLACEMENT OF THE CAPSTAN MOTOR

- 1) Perform the vertical adjustment of the capstan shaft according to 3-4. Replacement and Adjustment of Capstan Motor.
- 2) Play back the tracking portion of the alignment tape.
Connect the oscilloscope as follows:
1ch: CN2.....5 pin (RY-2 board)
2ch: CN2.....3 pin (RY-2 board)
- 3) Turn the tracking control knob clockwise to lower the RF output waveform to about 60% of the maximum.
- 4) Raise No. 7, 8 guides a little, and check the exit free waveform.
 - i) If the exit free waveform is within the range indicated in Fig. 4-15(a), (b), proceed from step 5).

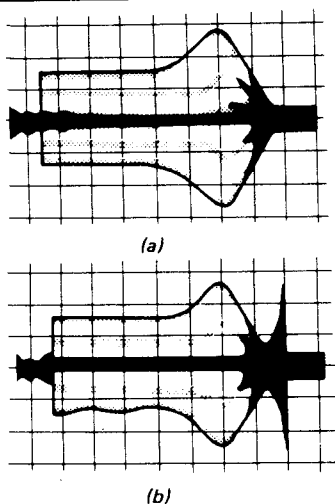


Fig. 4-15

- ii) If the peak of the exit free waveform is smaller than that illustrated in Fig. 4-15(a) (e.g. Fig. 4-16), loosen the lock screw, then turn the capstan adjustment screw until the waveform is within the specified range.

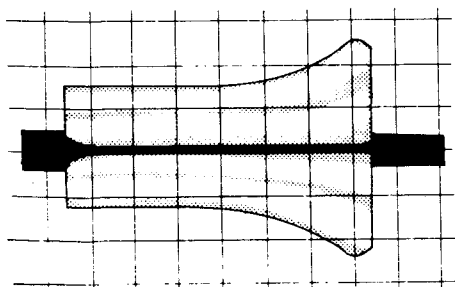


Fig. 4-16

- iii) If the peak shape of the exit free waveform differs from that shown in Fig. 4-15(b) (e.g. Fig. 4-17), loosen the lock screw, then turn the capstan adjustment screw clockwise until the waveform is within the specified range.

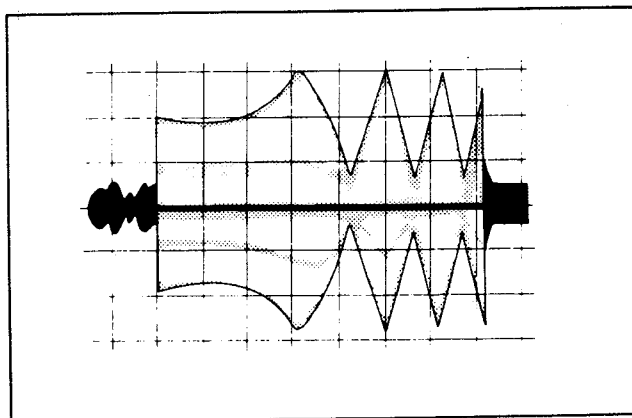


Fig. 4-17

Note:

After turning the capstan adjustment screw, wait until the waveform stabilizes (about 10 — 15 seconds) before continuing with the adjustment.

- 5) Lock the capstan lock screw. (Turn clockwise until it stops, then turn about 30° more. At this point, the exit free waveform will change slightly, and if it goes out of the range shown in Fig. 4-15(a), (b) return to step 4) and re-adjust.
- 6) Flatten the waveform with No. 7 guide, and match No. 8 guide to the tape. If the exit waveform rises, flatten it again with No. 7 guide and match No. 8 guide to the tape again.
- 7) Confirm and adjust according to 4-1-3, exit side adjustment procedure items 4), 5).

Note:

Check with L830 tape.

4-4. THIN TAPE MOVEMENT CHECK METHOD DURING TAPE PATH ADJUSTMENT

After confirming the tape path by using the procedures of section 4-1 through 4-3, check the thin tape movement by the procedure given below.

- 1) Prepare one reel of the commercial L-830. Remove the cassette lid with reference to Fig. 4-1.
- 2) Run L-830 prepared in the procedure 1 in the PLAY mode and check the following points;
 - i) Entrance Side
Check if the tape bends and is damaged on the No. 4 guide bottom flange, the No. 5 guide top flange and the No. 6 guide top flange. (The curl of the tape is allowed), but the bend of the tape is not allowed.) (Fig. 4-18)

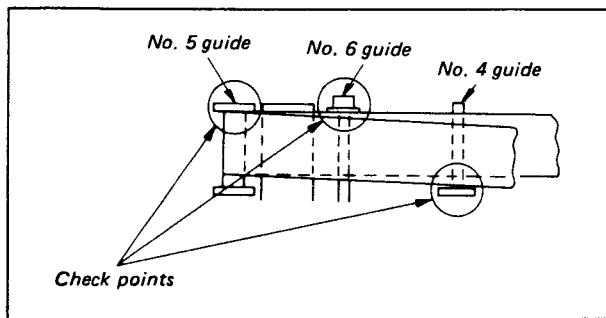


Fig. 4-18.

- ii) Exit side
Check if the tape bends and is damaged on the No. 7 guide top flange, the No. 8 guide top flange and the No. 10 guide top and bottom flanges. (The curl of the tape is allowed, but the bend of the tape is not allowed.) (Fig. 4-19)

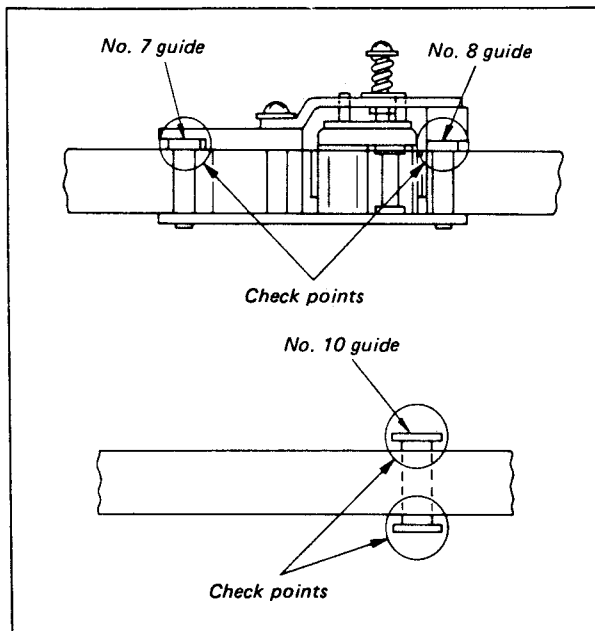


Fig. 4-19.

- 3) If the tape did not run normally in step 2, readjust the tape path by using KR5-2H.
 - a) The tape did not run normally on the entrance side, refer to 4-1-2.
 - b) The tape did not run normally on the exit side, refer to 4-1-3.

SECTION 5

ELECTRICAL ALIGNMENT

All the electrical alignment can be performed by using the equipment mentioned below, the alignment tape, and the PAL colour bar signal (100%).

[Equipment Required]

- (1) PAL Colour Monitor TV
- (2) Oscilloscope, Dual-trace, Bandwidth ... more than 10 MHz with delay mode
- (3) Frequency Counter
- (4) PAL Colour-Bar Generator
- (5) Digital voltmeter
- (6) VOM (20 k Ω /V)
- (7) Audio Signal Generator
- (8) Audio level meter (VTVM)
- (9) Attenuator
- (10) Alignment Tape, type: KR5-2H, Code No. 8-969-995-52
- (11) Alignment Tool (Adjusting screwdriver for semi-fixed resistors and coils)

Jig No. SL-0001, Code No. J-6080-001-A

[Setup for Alignment]

The antenna should be connected correctly to the antenna input terminal of the videocassette recorder.

It is important that the video output signal satisfies the specification because the telecast signal received by the incorporated tuner of the videocassette recorder is utilized as the adjustment signal of the machine. The incorporated tuner should be set to the channel with the best reception. The video signal should be checked with an oscilloscope connected to VIDEO OUT (BNC connector). Verify that the sync signal amplitude is approx. 0.3 Vp-p and the video signal amplitude is approx. 0.7 Vp-p at peak. Adjust the fine tuning while observing the signal and the TV screen so that the burst signal amplitude becomes approx. 0.3V $\pm$ 0.1 Vp-p. Also confirm that there is not spikes observed at the sync signal portion. (See Fig. 5-1.)

The video (colour bar) signal for the alignment is shown in Fig. 5-1.

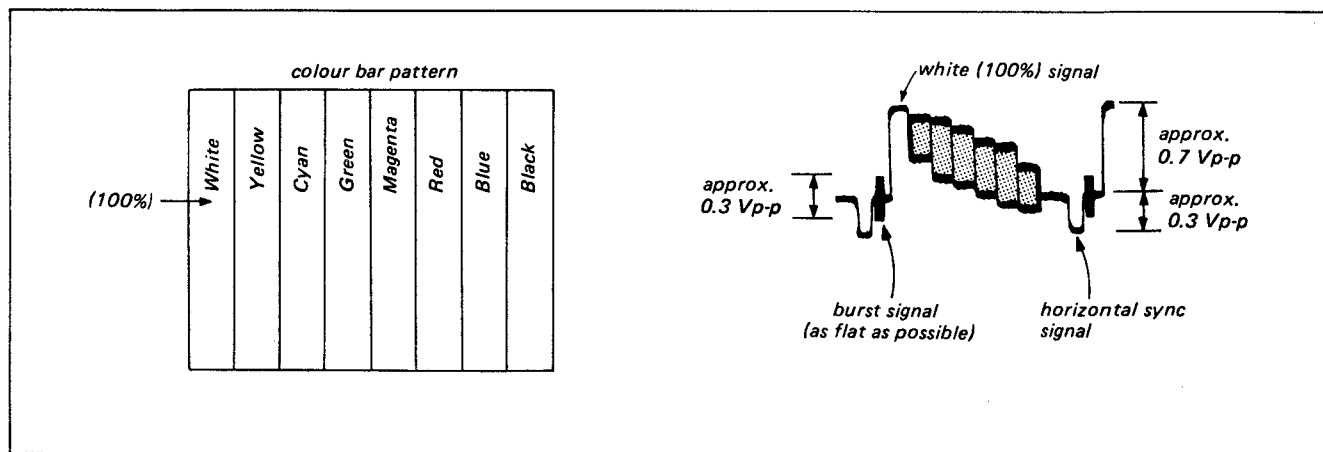


Fig. 5-1. Video (colour-bar) signal

[Alignment Tape]

KR5-2H

	Video signal	Audio signal	Playing time	Use for
1.	Colour bars	3 kHz - 5 dB	5 min	General performance, tape speed checks, switching position adjustment.
2.	Monoscope	333 Hz - 25 dB	5 min	Video head dihedral, audio level adjustment.
3.	RF sweep	5 kHz - 25 dB	5 min	Video, audio frequency characteristics, audio azimuth adjustment marker: 1, 2, 3.58, 4.5, 5.2 MHz
4.	Tracking 1 MHz (CH-B) *1 (Channel B is inserted in every 3 frames.)	1 kHz - 5 dB *2 (Signal is dropped out in the positions where channel B is inserted.)	5 min	Tracking, Audio height adjustments CTL Position check (Check if *1 and *2 are the same position.)

[Alignment Tool for Semi-fixed Variable Resistors and Coils]

Semi-fixed variable resistors and inductances should be adjusted with the alignment tool exclusively prepared for the adjustment of the components. A common screwdriver is too large for adjusting the components from the conductor side of a printed circuit board.

The metal blade of the alignment tool is used for variable resistors and trimmer capacitors and the plastic tip is used for variable inductances.

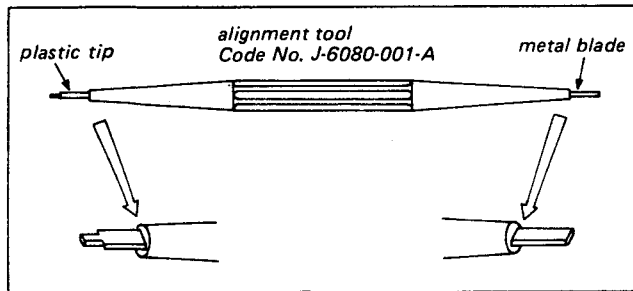


Fig. 5-2. Alignment tool

[Colour Bar Signal]

The 100% colour bar signal recorded on the Alignment tape is shown in Fig. 5-3.

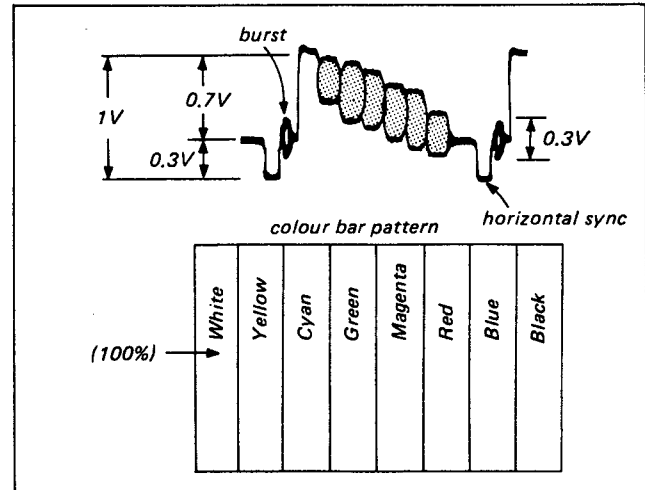


Fig. 5-3. Colour bar signal recorded on the alignment tape

[75Ω Terminating Method]

To terminate the video output terminal follow the steps shown in Fig. 5-4.

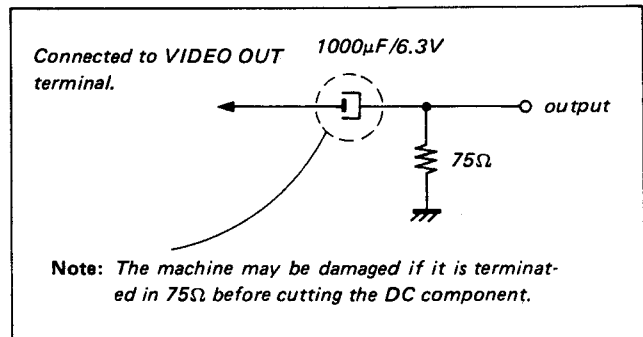
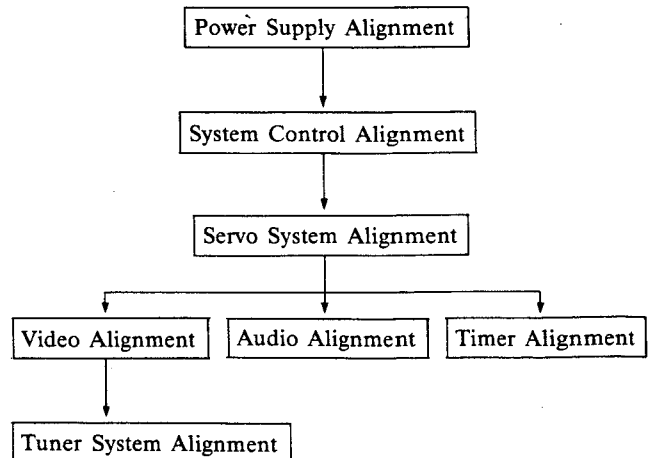


Fig. 5-4. 75Ω terminating circuit

[Adjustment procedure]

Adjust in the order given below.



5-1. POWER SUPPLY CHECK (PS-28 BOARD)

Measure an E-E mode (power supply switch ON).

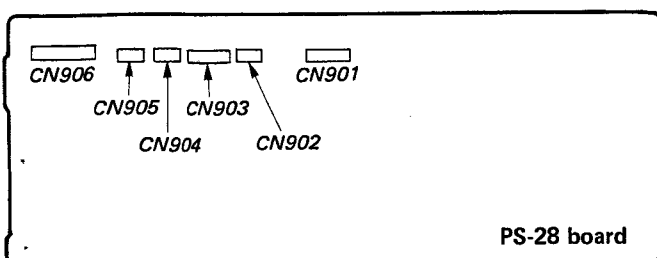


Fig. 5-5. Component layout

1. Switched +5V Check
Pin ① of CN901 shall be $5.5 \pm 0.3V$.
2. Switched +12V (M) Check
Pin ③ of CN901 shall be $12 \pm 0.3V$.
3. Switched +12V (E) Check
Pin ⑤ of CN901 shall be $12 \pm 0.1V$.
4. Unswitched +12V Check
Pin ③ of CN902 shall be $12.4 \pm 0.3V$.
5. Unswitched +40V Check
Pin ① of CN903 shall be $41 \pm 1.0V$.
6. Unswitched -25V Check
Pin ⑤ of CN903 shall be $-25 \pm 0.5V$.
7. Switched +9V Check
Pin ① of CN904 shall be $9 \pm 0.1V$.
8. Unswitched -5V Check
Pin ③ of CN906 shall be $-5.2 \pm 0.3V$.
9. Unswitched +5V Check
Pin ⑤ of CN906 shall be $5.8 \pm 0.3V$.
10. 4V ac Check
Pins ⑥ - ⑦ of CN906 shall be $3.9 \pm 0.2V$ ac.

5-3. SERVO SYSTEM ALIGNMENT

Alignment Sequence

1. Drum servo system alignment
2. Capstan servo system alignment

5-3-1. Drum Servo System Alignment

- 1) Drum Free Speed Adjustment (SS-22 Board)

Mode: Playback

Signal: Alignment tape colour bar, or monoscope

Oscilloscope: CH-1 Pin ② of CN350

CH-2 Pin ② of CN351

[Alignment method]

Adjust to $553 \mu\text{sec} \pm 50 \mu\text{sec}$ with RV303. (See Fig. 5-7.)

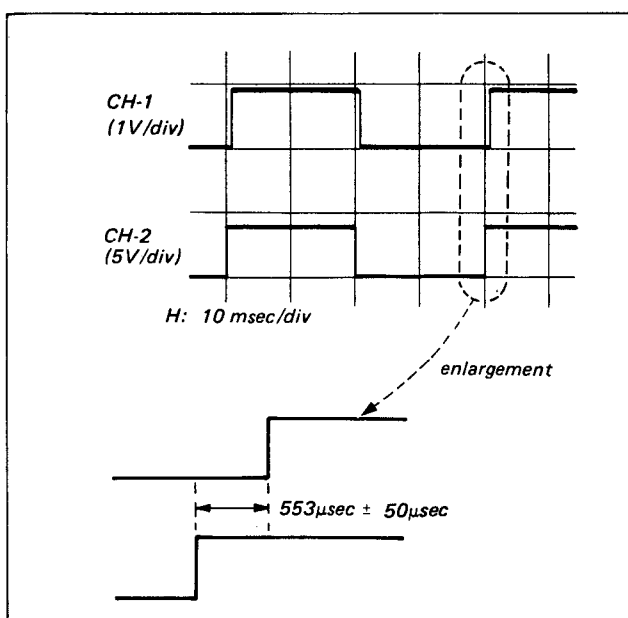


Fig. 5-7. Drum free speed adjustment

5-2. SYSTEM CONTROL CHECK (SS-22 Board)

1. Clock Frequency Check

Mode: E-E

Signal: None

Frequency counter: Pin ②⑥ of IC501 (TP501)

Check: f: 4 MHz

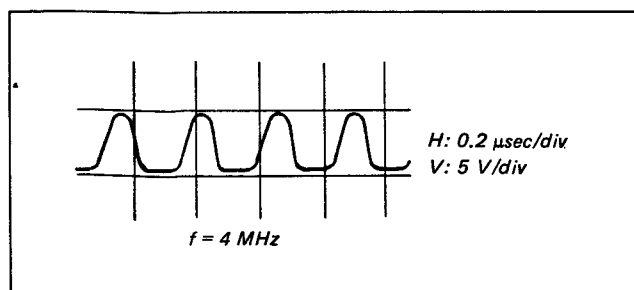


Fig. 5-6. System control check

2) RF Switching Position Adjustment (SS-22 Board)

Mode: Playback
Signal: Alignment tape colour bar or monoscope
Oscilloscope: CH-1 Pin ② of CN350
CH-2 Pin ④ of IC301

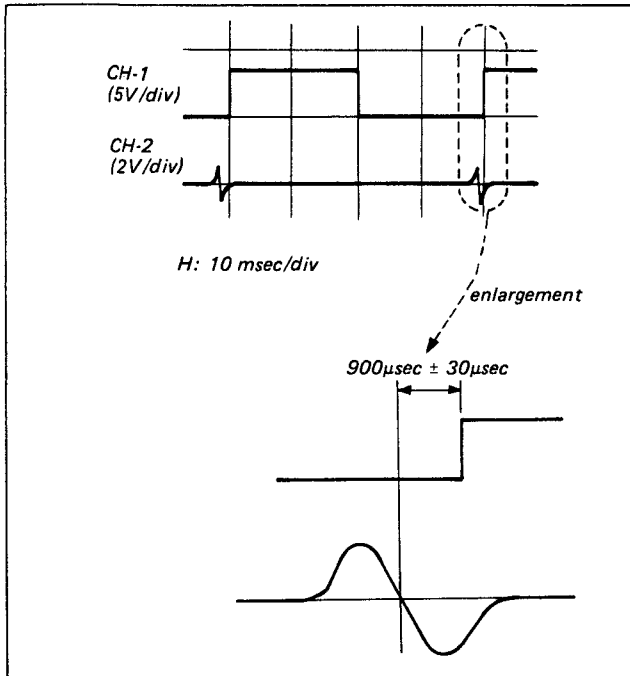


Fig. 5-8. RF switching position adjustment (1)

[Adjustment method]

- Adjust to $900 \mu\text{sec} \pm 30 \mu\text{sec}$ with RV302. (See Fig. 5-8.)
- Change connection of CH-2 only to Pin ③ of IC301.
- Adjust to $900 \mu\text{sec} \pm 30 \mu\text{sec}$ with RV301. (See Fig. 5-9.)

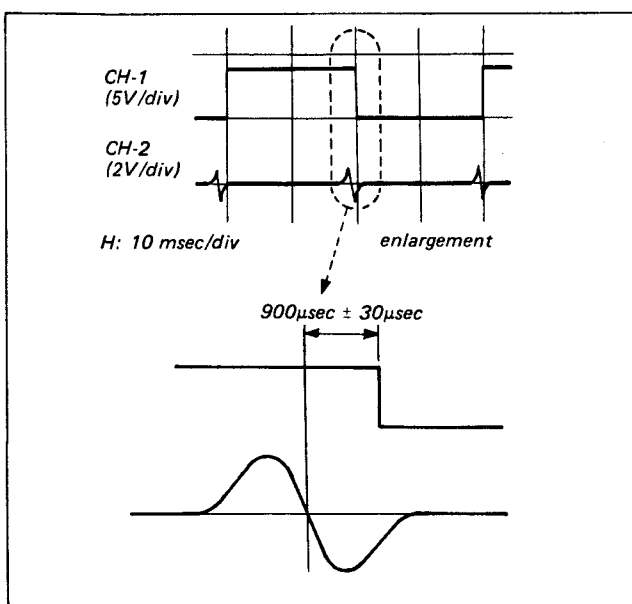


Fig. 5-9. RF switching position adjustment (2)

3) PICTURE SEARCH, Drum fH Correction Adjustment (SS-22 Board)

Mode: PICTURE SEARCH (FWD)
Signal: Alignment tape colour bar or monoscope
Oscilloscope: Pin ⑦ of CN306

[Adjustment method]

Adjust to $64 \mu\text{sec} \pm 0.2 \mu\text{sec}$ with RV310. (See Fig. 5-10.)

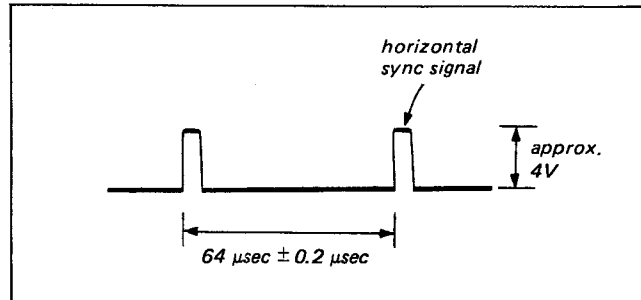


Fig. 5-10. PICTURE SEARCH, drum free speed adjustment

4) STILL, Drum fH Correction Adjustment (SS-22 board)

Mode: STILL
Signal: Alignment tape colour bar
Oscilloscope: Pin ⑦ of CN306

[Adjustment method]

Adjust to $64 \pm 0.2 \mu\text{sec}$ with RV305. (See Fig. 5-10.)

5-3-2. Capstan Servo System Alignment

1) Capstan DC Bias Adjustment (SS-22 Board)

Mode: playback
Signal: Alignment tape colour bar or monoscope
Oscilloscope: Pin ③ of CN351

[Adjustment method]

Adjust the duty (ratio for A and B) to $50\% \pm 5\%$ with the RV307.

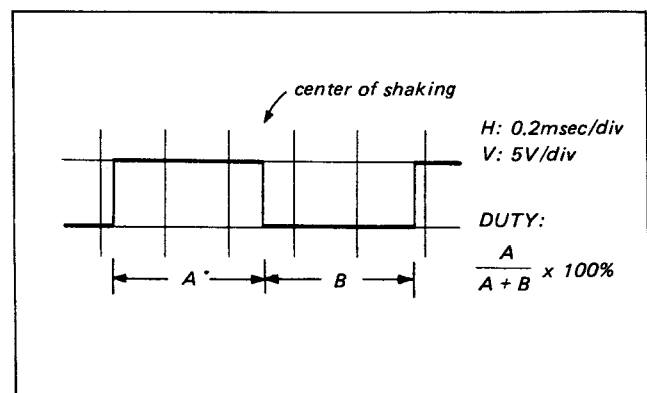


Fig. 5-10A. Capstan DC bias adjustment

- 2) **PICTURE SEARCH, Capstan DC Bias Adjustment (SS-22 Board)**
 Mode: **PICTURE SEARCH (FWD)**
 Signal: **Alignment tape colour bar or monoscope**

[Adjustment method]

- i) Set up the picture search (forward) mode and adjust with RV308 so that the progression of noise bars becomes as slow as possible. (See Fig. 5-10B.)
- ii) Set up the picture search (reverse) mode and check that noise bars do not progress very quickly.

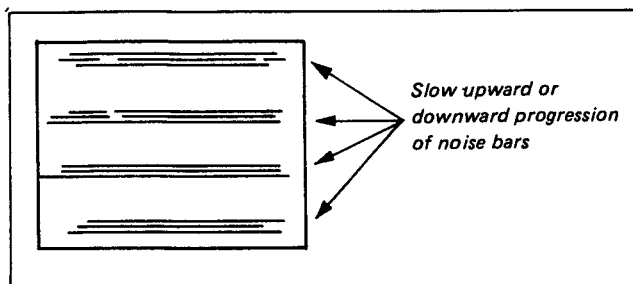


Fig. 5-10B. PICTURE SEARCH, capstan DC bias adjustment

- 3) **Tracking Center Adjustment (SS-22 Board)**
 Mode: **Playback**
 Signal: **Alignment tape colour bar, or monoscope**
 Oscilloscope: CH-1 Pin ② of CN350
 CH-2 Pin ① of CN350

[Adjustment method]

- i) Set the TRACKING knob to the center click position.
- ii) Adjust to $7.05 \text{ msec} \pm 0.05 \text{ msec}$ with RV304. (See Fig. 5-11.)

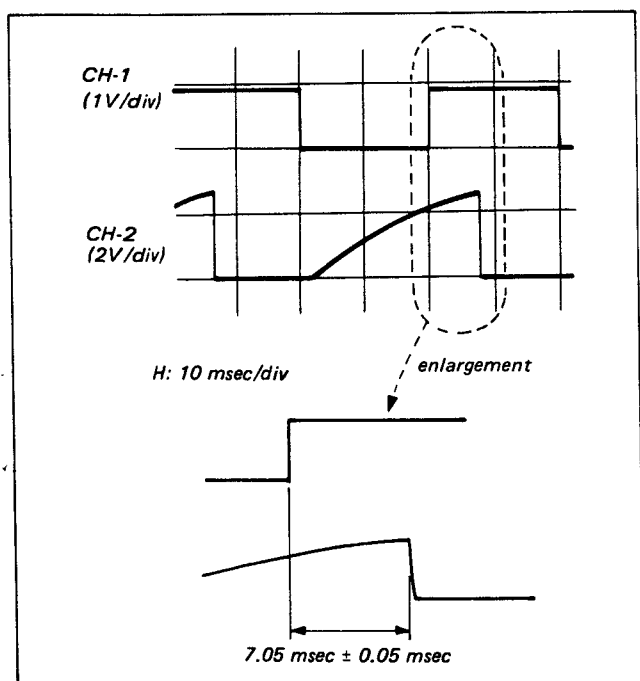


Fig. 5-11. Tracking center adjustment

5-4. PAL VIDEO SYSTEM ALIGNMENT

As a rule, first the playback system is aligned with an alignment tape to check that it operates normally, then the recording system is aligned.

The alignment sequence is shown below. The Y signal and chroma signal systems are aligned for both playback and recording systems.

Colour video signal supplied by the PAL colour bar generator is used as video input signal for video system alignment in the record mode. Check that the sync and colour burst signals conform to the specifications designated in "Set-up for Alignment" in Fig. 5-1.

[Playback System Alignment]

1. Playback amplifier frequency response adjustment
2. Playback A'-ch frequency response adjustment
3. Expand adjustment
4. Y-comb adjustment
5. Dropout compensator adjustment
6. Playback video level adjustment
7. Carrier balance adjustment
8. Chroma comb filter adjustment
9. Jog exchange chroma level adjustment
10. Shift adjustment
11. V. Jitter adjustment

[Record System Alignment]

1. Sync and peak AGC adjustment
2. Carrier set adjustment
3. Deviation adjustment
4. Compress adjustment
5. $1/2 f_H$ shift adjustment
6. Dark clip and white clip adjustment
7. Y record current adjustment
8. 4.43 MHz REF adjustment
9. Pilot burst flag adjustment
10. ACC adjustment
11. AFC adjustment
12. AFC offset adjustment
13. Pilot burst signal level adjustment
14. Cleaning flag adjustment
15. Chroma record current adjustment

[STILL System Alignment]

1. Still system adjustment

5-4-1. PLAYBACK SYSTEM ALIGNMENT

1) Playback Amplifier Frequency Response Adjustment (RY-2 Board)

- Adjust both the A and B channels.
 - The B channel indicated by ().
- Mode: Playback
Signal: Alignment tape RF sweep
Oscilloscope: Pin ④ of CN2
External trigger: Pin ⑥ of CN2

[Adjustment method]

- Turn tracking knob to maximum output.
- Adjust RV204 to make the 2MHz amplitude of A and B channels equal (See Fig. 5-12).
- Set the trigger slope to - (+).
- Adjust the 5.2MHz amplitude to 55-75% of the 2MHz amplitude with RV201 (RV205) (See Fig. 5-12).

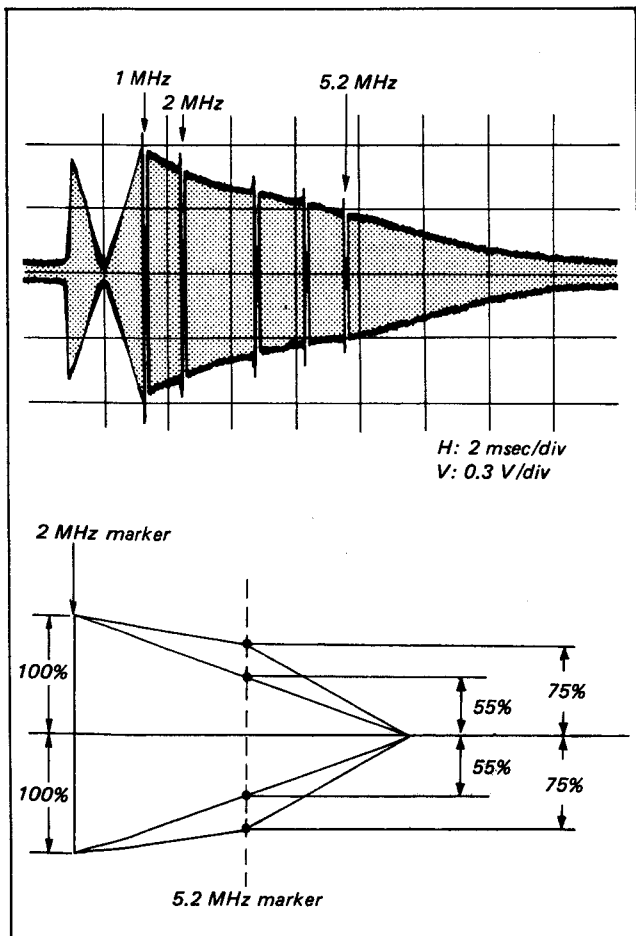


Fig. 5-12. Playback amplifier frequency characteristic adjustment

2) Playback A'-ch Frequency Response Adjustment

Mode: Playback
Signal: Alignment tape RF sweep
Oscilloscope: Pin ④ of CN2
External trigger: Pin ⑥ of CN2

[Adjustment method]

- Playback the RF sweep segment of the alignment tape.
- RY-2 board: Pin ② of CN2 to GND.
- SS-22 board: Pull out CN309 and insert it in connector of CN352.
- Increase the A'-ch output level to maximum with the TRACKING knob.
- Adjust RV202 and RV203 so that A'-ch level is equal to A-ch. (See Fig. 5-12.)
RV202: 2MHz adjustment. RV203: 5.2MHz adjustment.

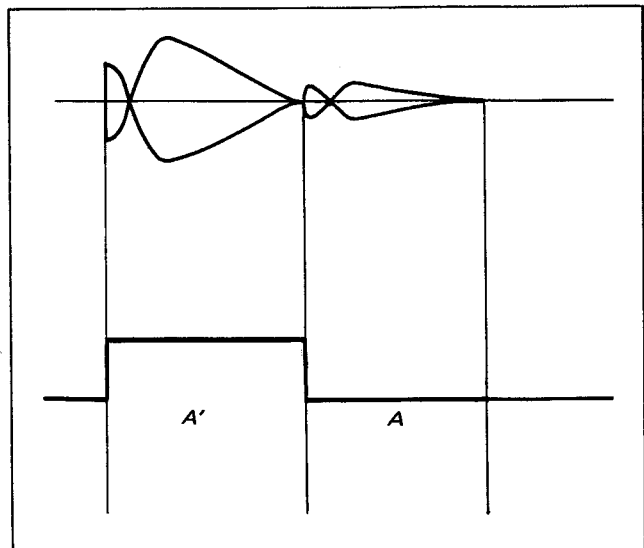


Fig. 5-13.

2) Expand Adjustment (RY-2 Board)

Mode: Playback
Signal: Colour bar
Digital voltmeter: See Fig. 5-14.

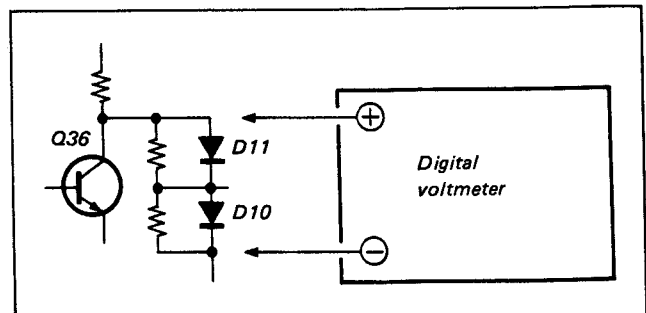


Fig. 5-14.

[Adjustment method]

- Adjust to 0.43 ± 0.01 Vdc with RV13.

3) Y-Comb Adjustment (RY-2 Board)

Mode: Playback
Signal: Colour bar
Oscilloscope: Pin ⑮ of IC4

[Adjustment method]

- i) Adjust RV12 for minimum output. (See Fig. 5-15.)

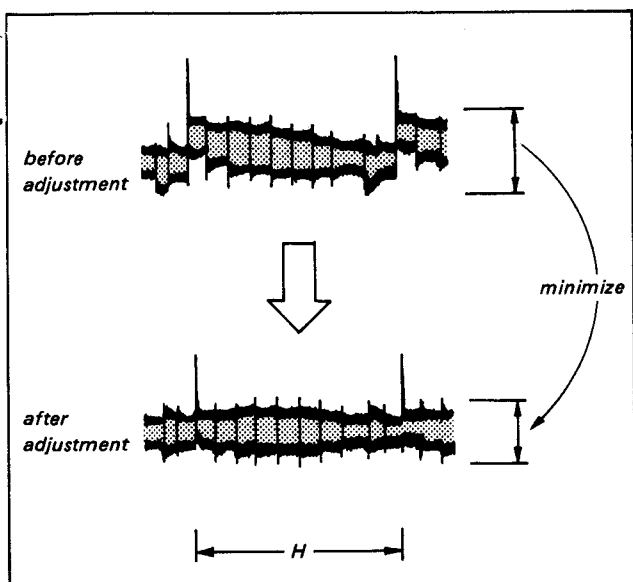


Fig. 5-15. Y-comb adjustment

4) Dropout Compensator Threshold Adjustment (RY-2 Board)

Mode: Playback
Signal: A recorded tape with dropouts

[Adjustment method]

- i) Turn RV11 fully clockwise (↻) as seen from the pattern side. In this state, dropouts appear on the monitor screen.
- ii) Slowly turn RV11 counterclockwise (↺) and set to make the dropouts disappear.
- iii) Rewind the tape and verify that the dropouts described in (i) above have disappeared.

5) Playback Video Level Adjustment (RY-2 Board, YC-26 Board)

Mode: Playback
Signal: Alignment tape colour bar
Oscilloscope: VIDEO OUT (75Ω terminated) on YC-26 Board

[Adjustment method]

- i) Adjust to $1.0V \pm 0.05 V_{p-p}$ with RV14 on RY-2 Board.

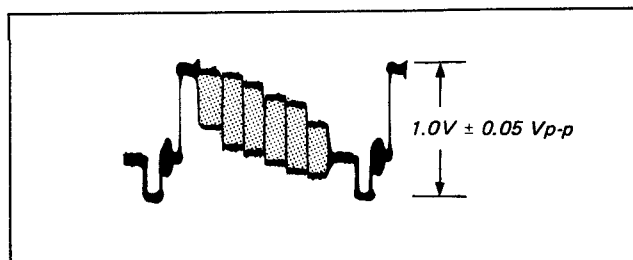


Fig. 5-16. Playback video level adjustment

6) Carrier Balance Adjustment (YC-26 Board)

Mode: Playback
Signal: Alignment tape colour bar
Adjust while observing the monitor TV screen.

[Adjustment method]

- i) Minimize beats with RV004.

7) Chroma Comb Filter Adjustment (YC-26 Board)

Mode: Playback
Signal: Alignment tape colour bar
Adjust while observing the monitor TV screen.

[Adjustment method]

- i) Minimize beats with RV003 and LV002.

8) JOG Exchange Chroma level Adjustment (YC-26 Board)

Mode: PB • PAUSE (STILL)
Signal: colour bar
Oscilloscope: Pin ⑧ of IC009

[Adjustment method]

- i) Adjust RV013 so that the fluctuation of level is minimum. (See Fig. 5-17.)

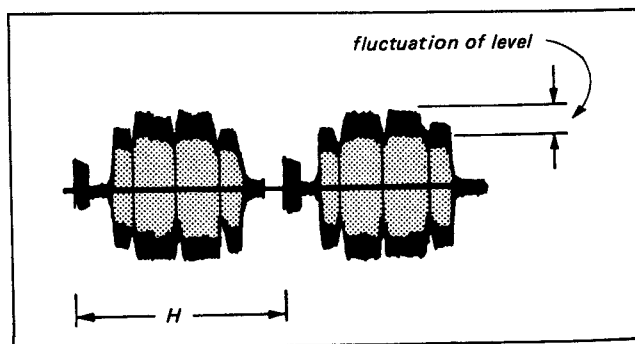


Fig. 5-17. JOG EXCH. C. level adjustment

9) Shift Adjustment (YC-26 Board)

Mode: Playback
Signal: Alignment tape colour bar
Oscilloscope: Base of Q034

[Adjustment method]

- i) Align the signal level (per 1H) with RV008.

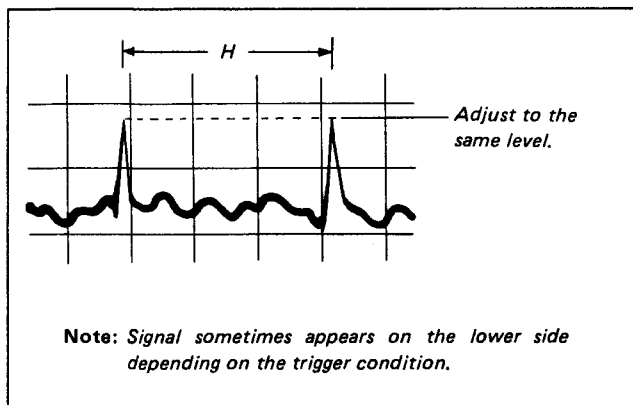


Fig. 5-18. Shift adjustment

10) V Jitter Adjustment (YC-26 Board)

Mode: Playback
Signal: Alignment tape colour bar
Oscilloscope: CH-1 Pin⑥ of CN007
CH-2 Pin③ of IC017

[Adjustment method]

- i) Adjust to $166\mu\text{sec} \pm 5\mu\text{sec}$ with RV020.
(See Fig. 5-19.)

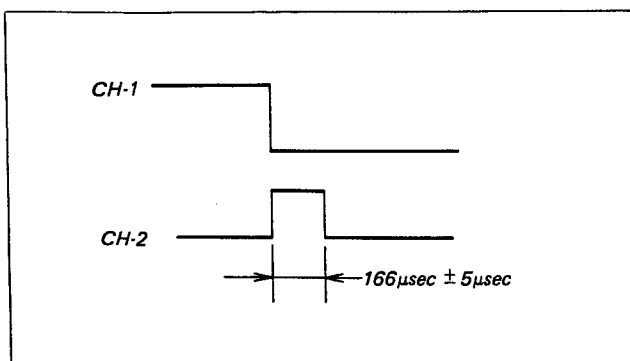


Fig. 5-19.

5-4-2. Record System Alignment

1) Sync and Peak AGC Adjustment (YC-26 Board)

Mode: E-E
Oscilloscope: VIDEO OUT (75Ω terminated)
Signal: B/W

[Adjustment method]

- i) Turn RV10 fully counterclockwise (↺) as seen from the pattern side. (Peak AGC off)
ii) Adjust to 1 Vp-p with RV11.
iii) Turn RV10 clockwise (↻) and set it so that the output level just starts to lower.

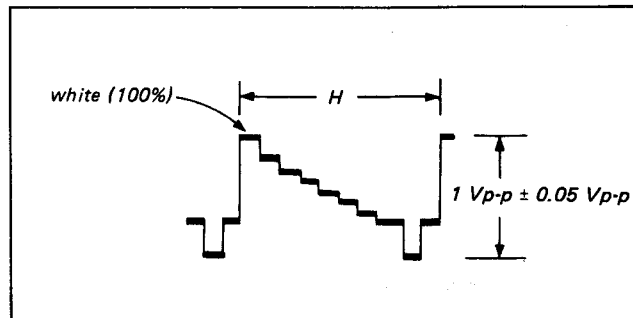


Fig. 5-20. Sync and peak AGC adjustment

2) Carrier Set Adjustment (RY-2 Board)

Mode: E-E
Signal: None
Frequency counter: Pin ④ of IC3

[Adjustment method]

- i) Adjust to $3.8 \text{ MHz} \pm 0.04 \text{ MHz}$ with RV8.

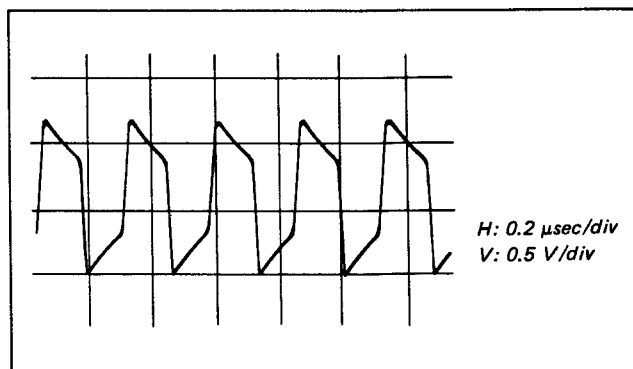


Fig. 5-21. Carrier set adjustment

3) Deviation Adjustment (YC-26 Board)

- The playback system adjustment and the carrier set adjustment in Paragraph 2) above must be completed before making this adjustment.

Mode: Self-recording and playback
Signal: Colour bar
Oscilloscope: Pin ④ of CN005, VIDEO OUT (75Ω terminated)

[Adjustment method]

- i) Supply the colour bar signal and set up E-E mode.
- ii) Connect the oscilloscope to Pin ④ of CN005.
- iii) Adjust the Y signal level to 1 Vp-p with RV012.
- iv) Set up RECORD mode.
- v) Playback the recorded section of the tape.
- vi) Connect the oscilloscope to VIDEO OUT.
- vii) Check that the video signal level is $1.0 \text{ Vp-p} \pm 0.05 \text{ Vp-p}$, if the level is outside of this range, repeat Steps iv) through vi) above adjusting with RV012 until the standard value is obtained.

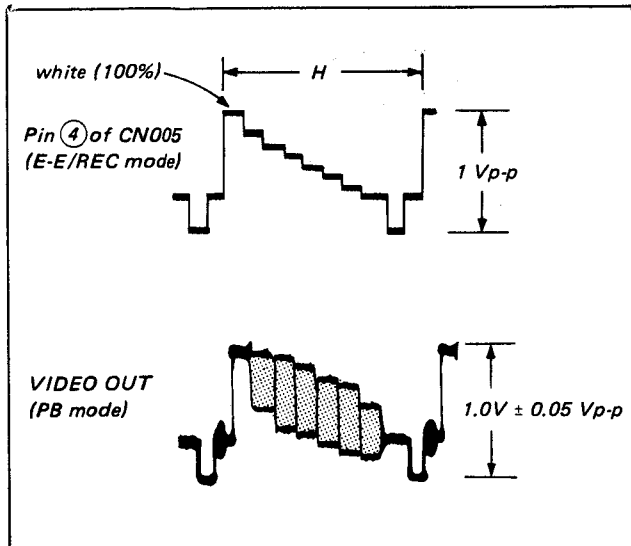


Fig. 5-22. Deviation adjustment

4) Compress Adjustment (RY-2 Board)

Mode: E-E
Signal: None
Digital voltmeter: See Fig. 5-23.

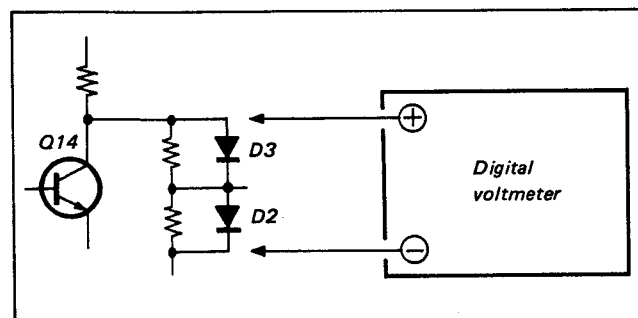


Fig. 5-23.

[Adjustment method]

- i) Adjust to $0.3 \text{ V} \pm 0.01 \text{ Vdc}$ with RV7.

5) $1/2 f_H$ Shift Adjustment (RY-2 Board)

Mode: Record
Signal: None
Spectrum analyzer: Pin ④ of IC3

[Adjustment method]

- i) Adjust RV6 so that the fluctuation of frequency is $7.8 \text{ kHz} \pm 1.5 \text{ kHz}$.

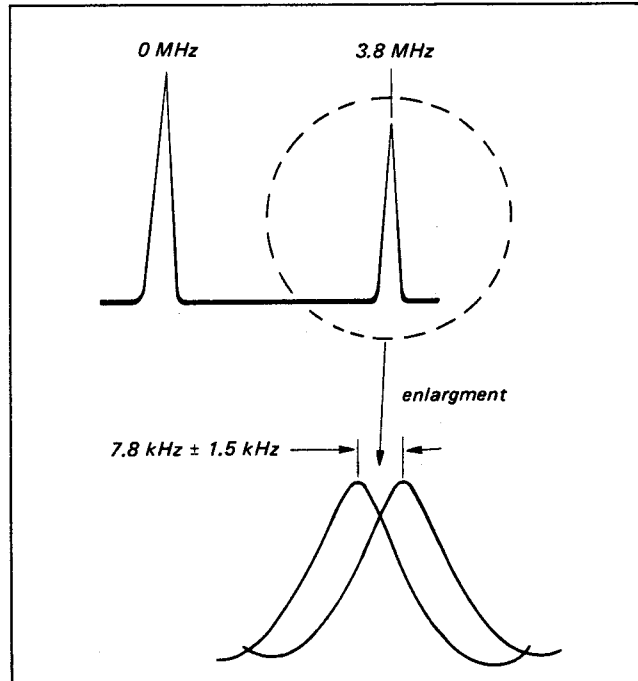


Fig. 5-24. $1/2 f_H$ shift adjustment

6) Dark Clip and White Clip adjustment (RY-2 Board)

Mode: E-E
Signal: Colour bar
Oscilloscope: Emitter of Q17

[Adjustment method]

- i) Adjust RV10 so that the signal tip (dark peak) is $70\% \pm 10\%$. (See Fig. 5-25.)
- ii) Adjust RV9 so that the signal tip (white peak) is $220\% \pm 10\%$.

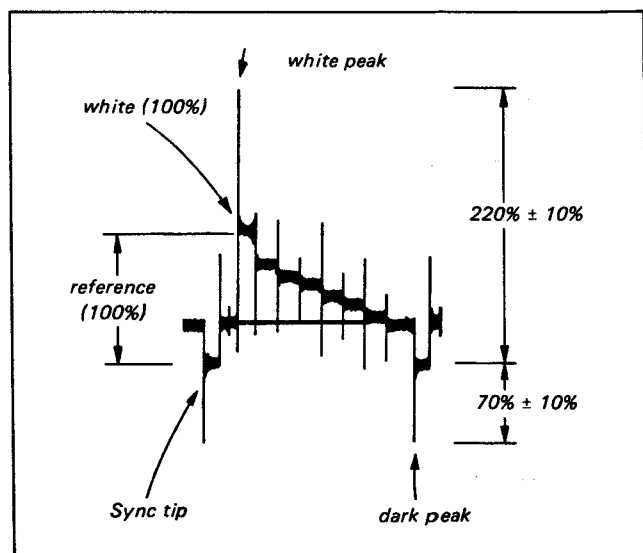


Fig. 5-25. Dark clip and white clip adjustment

7) Y Record Current Adjustment (RY-2 Board)

Mode: Record

Signal: None

Oscilloscope: Pin ② of CN3 (TP4)

[Adjustment method]

- i) Adjust to $500\text{mV} \pm 20\text{mVp-p}$ with RV1. (See Fig. 5-26.)

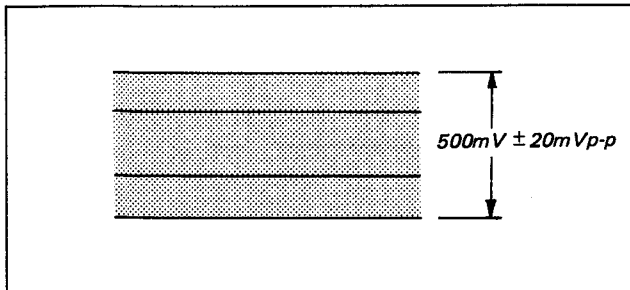


Fig. 5-26. Y record current adjustment

8) 4.43 MHz REF. adjustment (YC-26 Board)

Mode: E-E

Signal: Colour bar

Frequency counter: Pin ⑩ of CN008

[Adjustment method]

- i) Adjust to $4.433619\text{ MHz} \pm 5\text{ Hz}$ with CV001.

9) Pilot Burst Flag Adjustment (YC-26 Board)

Mode: E-E

Signal: Colour bar

Oscilloscope: Pin ⑩ of IC12

[Adjustment method]

- i) Adjust to $2.2\text{ }\mu\text{sec} \pm 0.1\text{ }\mu\text{sec}$ with RV009. (See Fig. 5-27.)

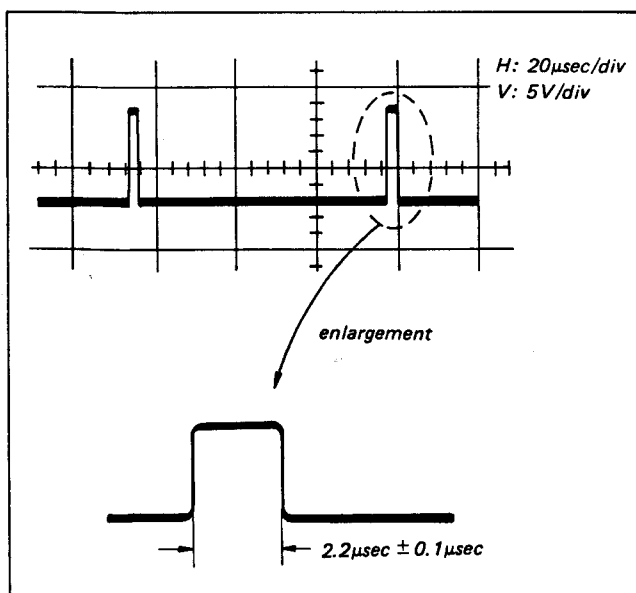


Fig. 5-27. Pilot burst flag adjustment

10) ACC Adjustment (YC-26 Board)

Mode: E-E

Signal: Colour bar

Oscilloscope: Pin ②④ of IC001

[Adjustment method]

- i) Adjust to $0.68\text{ V} \pm 0.05\text{ Vp-p}$ with RV001. (See Fig. 5-28.)

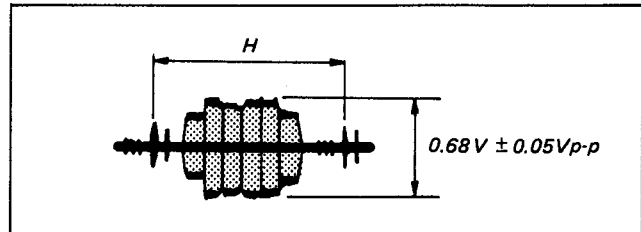


Fig. 5-28. ACC adjustment

11) AFC Adjustment (YC-26 Board)

Mode: E-E

Signal: Colour bar

Oscilloscope: Pin ⑩ of IC003

[Adjustment method]

- i) Adjust to $1.7\text{ Vdc} \pm 0.1\text{ Vdc}$ with RV006. (See Fig. 5-29.)

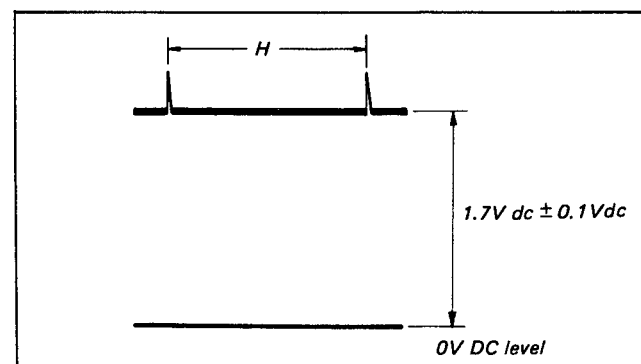


Fig. 5-29. AFC adjustment

12) AFC Offset Adjustment (YC-26 Board)

Mode: Record

Signal: Colour bar

Oscilloscope: Pin ⑩ of IC003

[Adjustment method]

- i) Adjust RV005 so that the fluctuation of DC level is minimum. (See Fig. 5-30.)

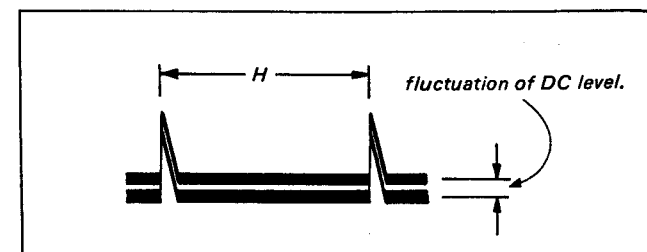


Fig. 5-30. AFC offset adjustment

13) Pilot Burst Signal Level Adjustment (YC-26 Board)

Mode: E-E
Signal: Colour bar
Oscilloscope: Pin ⑧ of IC002

[Adjustment method]

- i) Align the pilot burst signal with the chroma signal level using RV002.

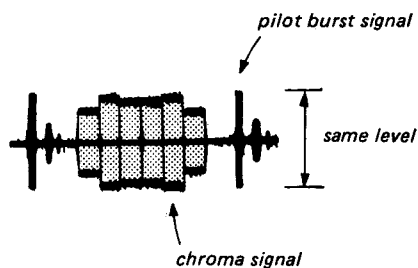


Fig. 5-31. Pilot burst signal level adjustment

14) Cleaning Flag Adjustment (YC-26 Board)

Mode: E-E
Signal: Colour bar
Oscilloscope: CH1 Pin ⑥ of IC12
CH2 Pin ⑨ of IC12

[Adjustment method]

- i) Adjust to $1.0 \mu\text{sec} \pm 0.1 \mu\text{sec}$ with RV006. (See Fig. 5-32.)

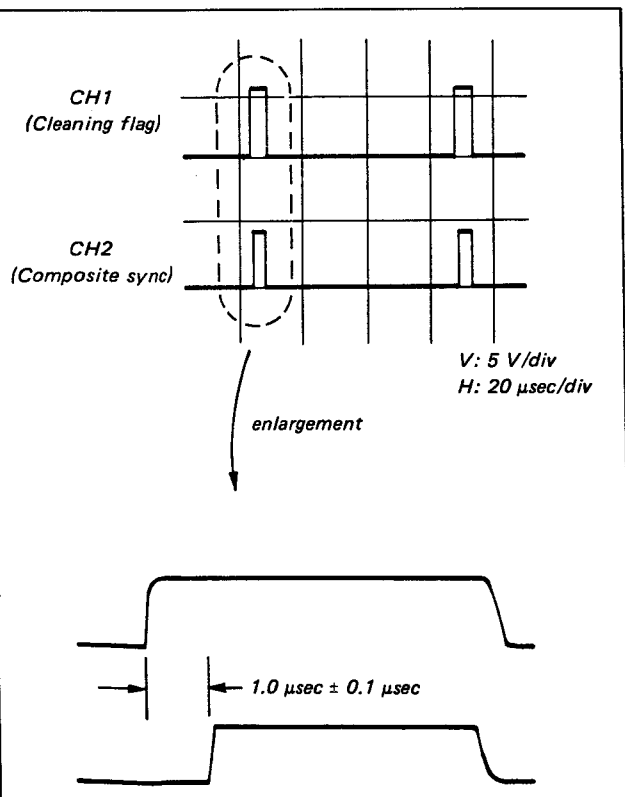


Fig. 5-32. Cleaning flag adjustment

15) Chroma Record Current Adjustment (RY-2 Board)

Mode: Record
Signal: Colour bar
Oscilloscope: Pin ③ of CN3

[Adjustment method]

- i) Adjust to $340\text{mV} \pm 10\text{mVp-p}$ with RV5. (See Fig. 5-33.)



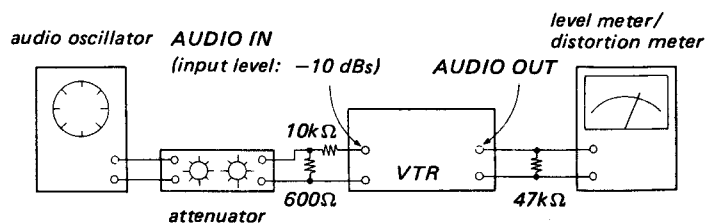
Fig. 5-33. Chroma record current adjustment

5-5. AUDIO SYSTEM ADJUSTMENT (AS-8 Board)

Use a Dynamicron tape for adjustments.

[Connection of Related Equipment]

Note: Set the INPUT SELECT switch to LINE.
Set the TONE switch to HIGH.



[Adjustment method]

1. ACE head adjustment... See "Mechanical Adjustment"
2. Playback frequency characteristic check
3. Playback output level adjustment
4. Bias oscillator check
5. Record bias adjustment
6. Record current adjustment
7. Overall frequency characteristic check
8. E-E output check
9. Overall S/N check
10. Overall distortion check

1. ACE Head Adjustment

Refer to "Mechanical Adjustment"

2. Playback Frequency Characteristic Check

- 1) Play back 333 Hz and 7 kHz from the alignment tape and check so that the level difference between 333 Hz and 7 kHz is within $-1 \text{ dB} \pm 2 \text{ dB}$.

3. Playback Output Level Adjustment

- 1) Play back 333 Hz from the alignment tape and adjust so that the output level is $-10 \text{ dBs} \pm 0.5 \text{ dB}$ with RV501.

4. Bias Oscillator Check

- 1) Set the input signal level to zero and set up the RECORD mode.
- 2) Connect a frequency counter to Pin ② of CN506. The reading should be $65 \text{ kHz} \pm 6.5 \text{ kHz}$. (See Fig. 5-33.)

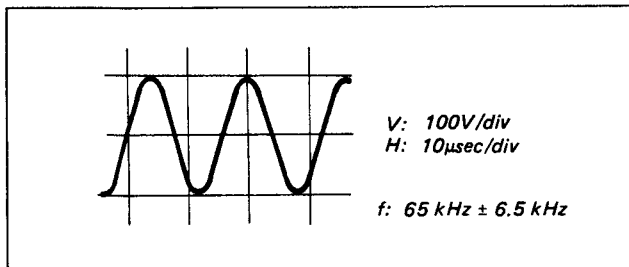


Fig. 5-34. Bias oscillator check

5. Record Bias Adjustment

Check that "Playback frequency characteristic adjustment" has been made.

- 1) Supply a 333 Hz signal.
- 2) Set up the E-E mode and adjust the oscillator output level so that the level meter reading is -30 dBs .
- 3) Record signals.
- 4) Supply a frequency of 7 kHz and perform Steps 2) and 3) above.
- 5) Play back the recorded section of the tape and check that the output level at 7 kHz is $\pm 1 \text{ dB}$ relative to the output level at 333 Hz. If the level is outside this range, repeat Steps 1) through 4) adjusting with RV503 until the standard is met.

6. Record Current Adjustment

- 1) Supply a 333 Hz signal at -10 dBs .
- 2) Record signals.
- 3) Play back the recorded section of the tape and check that the output level is $-10 \text{ dBs} \pm 1 \text{ dB}$. If the level is outside this range, repeat Steps (1) through (2) above adjusting with RV502 until the standard value is obtained.

7. Overall Frequency Characteristic Check

- 1) Connect a 333 Hz signal.
- 2) Set up the E-E mode and adjust the oscillator output level so that the level meter reading is -30 dBs .
- 3) Record signals.
- 4) Change the frequency to 50 Hz, 100 Hz, 7 kHz and 10 kHz and repeat Steps 2) and 3)
- 5) Play back the recorded section of the tape and verify that the level is within the specification. (See Fig. 5-35.)

Standard values: With reference to the 333 Hz playback output level.

50 Hz $+2.5$
 -8 dB

100 Hz $+2.5$
 -4 dB

7 kHz $+2.5$
 -2.5 dB

10 kHz $+2.5$
 -6 dB

- 6) If the specified values cannot be attained, perform 2) again. "Playback Frequency Characteristic Adjustment" and "Record Bias Adjustment".
- 7) Remove the jumper wire after making the adjustment.

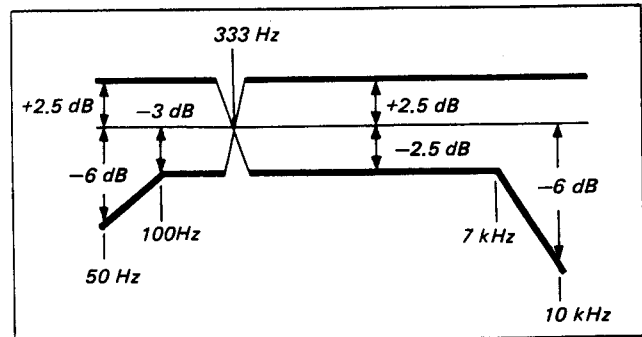


Fig. 5-35. Overall frequency characteristic

8. E-E Output Check

- 1) Connect a 333 Hz signal at -10 dBs .
- 2) Set up the E-E mode.
- 3) Check that the output level is $-10 \text{ dBs} \pm 2 \text{ dB}$.

9. Overall S/N Check

- 1) Supply a 333 Hz signal at -10 dBs .
- 2) Record signals.
- 3) Set the input signal level to zero and record signals.
- 4) Play back the recorded section of the tape and check that the output level difference is greater than 38 dB.

10. Overall Distortion Check

- 1) Supply a 333 Hz signal at -10 dBs .
- 2) Record signals.
- 3) Play back the recorded section of the tape and verify that the distortion is below 5%.

5-6. TUNER SYSTEM ADJUSTMENT (TU-47 Board)

- 1) Tuner AGC Adjustment
 - i) Set the DX/LOCAL switch on the rear panel to DX.
 - ii) Input RF signals (UHF channel, 61 dB μ /75 Ω open) from a colour bar generator, etc.
 - iii) Connect a digital voltmeter to TP001 (Pin ④ of IC101).
 - iv) Adjust RV101 to $7.2V \pm 0.1V$ dc.
- 2) AFT Adjustment
 - i) Set RV102 to the mechanical center.
 - ii) Set AFT switch to OFF.
 - iii) Input RF signals, and adjust PRESET VR finely for the best picture quality, while watching the monitor screen.
 - iv) Set AFT switch to ON., and make the following adjustments.
 - v) Connect a digital voltmeter to pin ⑤ of IC101.
 - vi) Adjust T005 to 6V dc.
 - vii) Connect a digital voltmeter across pins ⑤ and ⑥ of IC001.
Adjust RV102 to $0V \pm 0.25V$ dc.

5-7. TIMER SYSTEM ADJUSTMENT (TM-47 Board)

- 1) Clock Adjustment
 - i) Connect a time interval counter to TP008.
 - ii) Adjust to $4.194302MHz \pm 5Hz$ with CV001.

5-8. STILL SYSTEM ADJUSTMENT

- 1) STILL Adjustment

Mode: Playback
Signal: Standard tape
(KR4-4G or one with CTL recorded)

[Adjustment method]

- i) Adjust RV701 so that TP703 waveform is as straight as possible and also 40msec cycle. If level difference appears, adjust with RV702.

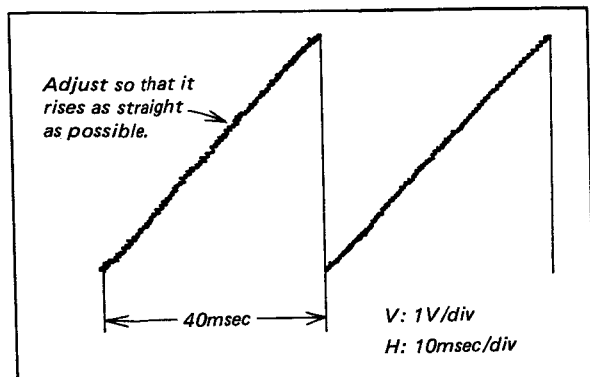
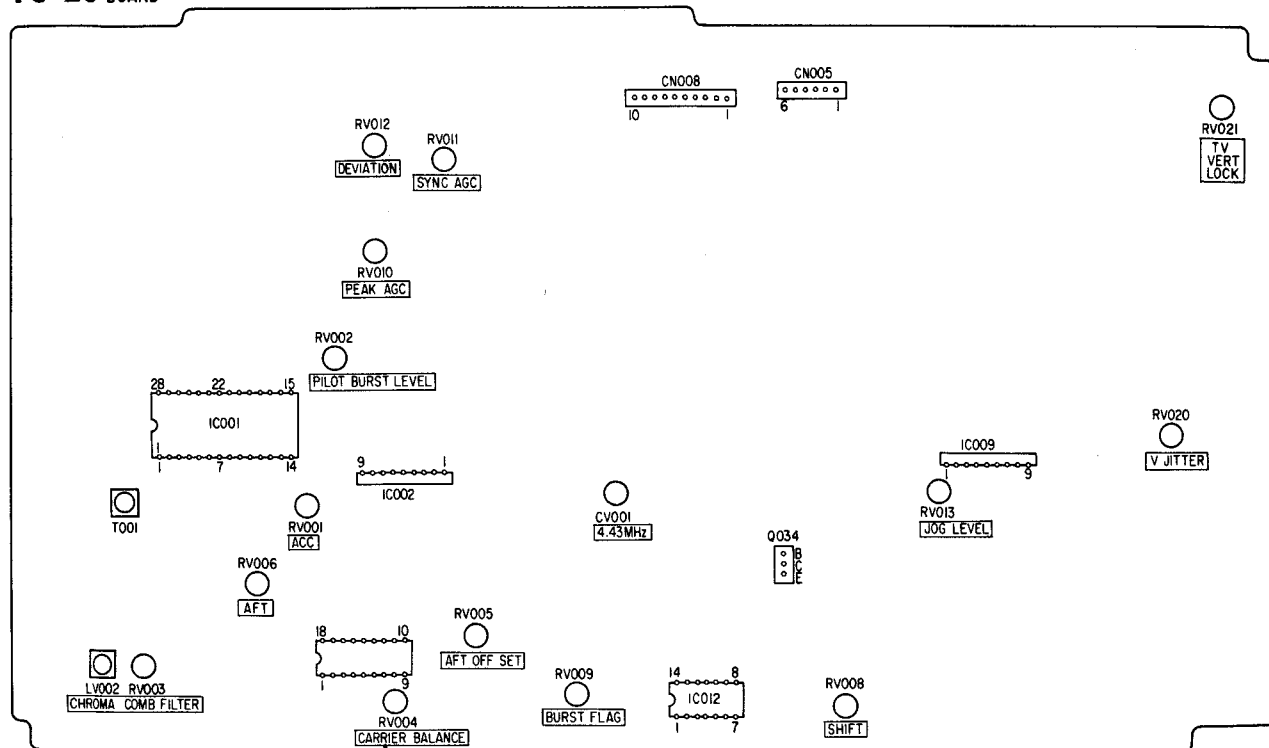
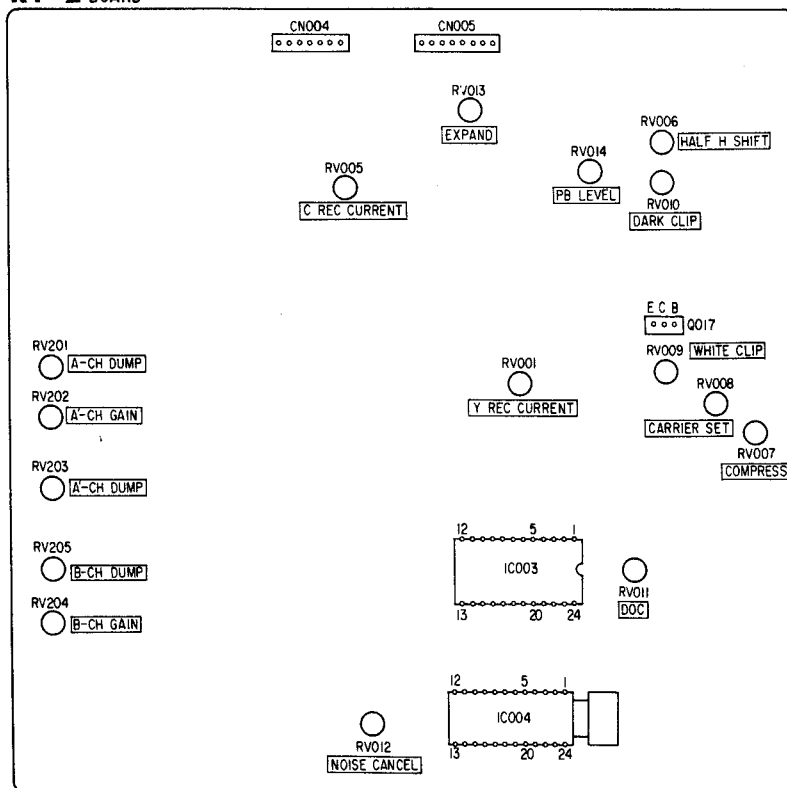


Fig. 5-36.

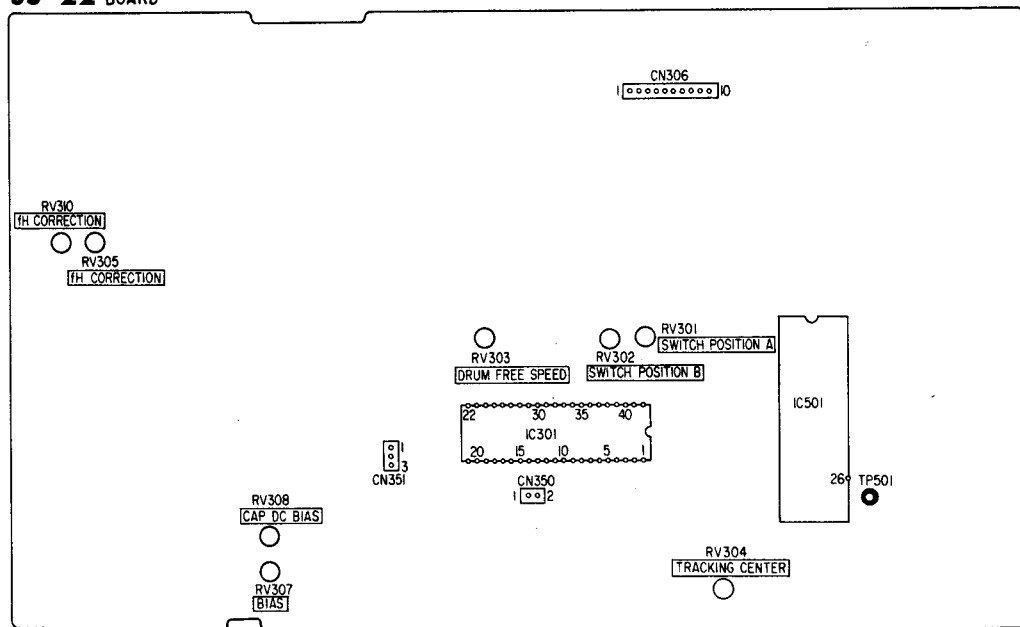
YC-26 BOARD



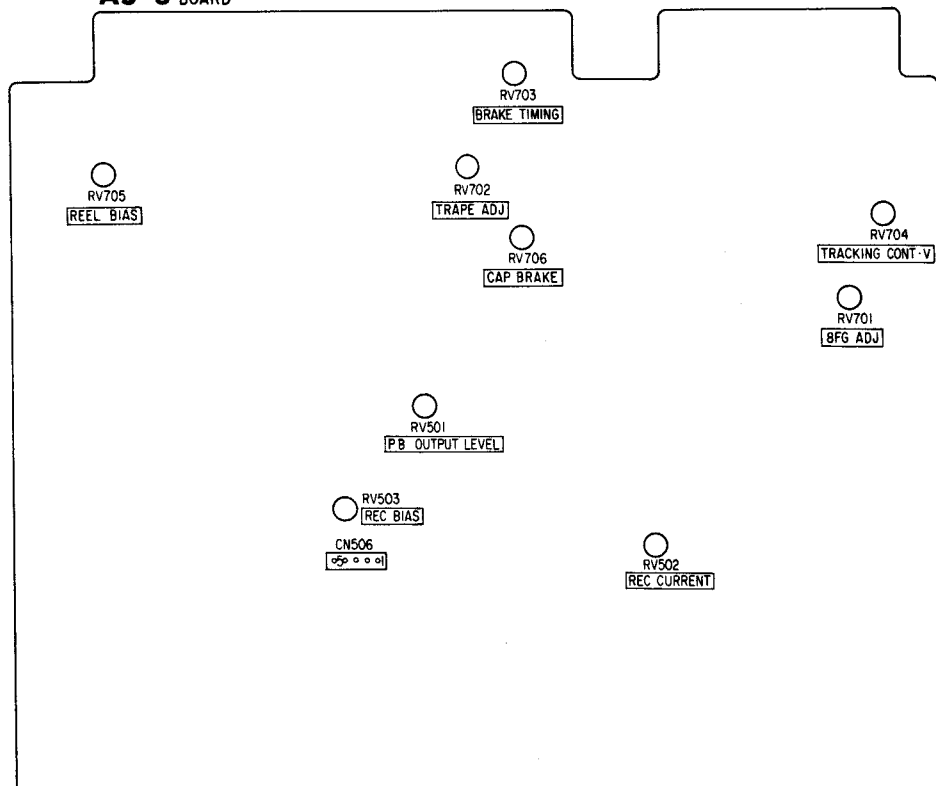
RY-2 BOARD



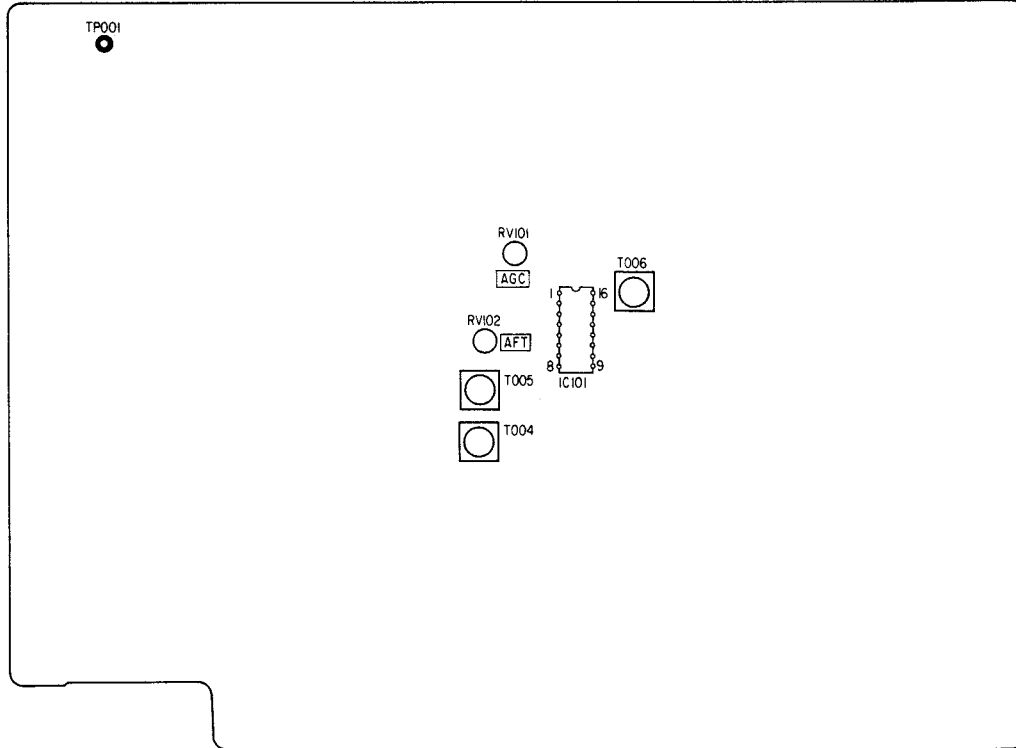
SS-22 BOARD



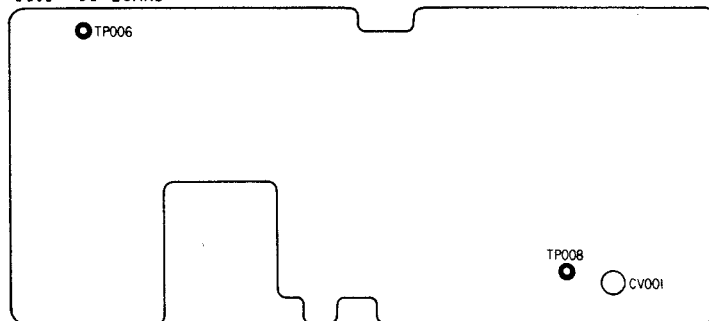
AS-8 BOARD



TU-47 BOARD



TM-47 BOARD



PS-28 BOARD

